



# **SPECIALIZED BICYCLE OWNER'S MANUAL**

**APPENDIX A SUPPLEMENT**

**2014 RIDER/BIKE WEIGHT LIMITS  
AND TERRAIN CONDITIONS**

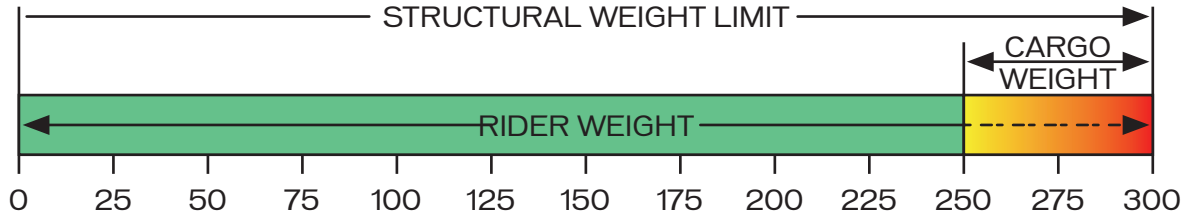


# 2014 APPENDIX A SUPPLEMENT

## INTRODUCTION

This Appendix A manual supplement is designed as an annual addition to the Appendix A section found in the Specialized Bicycle Owner's Manual. This appendix is designed to help the rider differentiate between frame structural weight limits and braking distance weight limits.

Each bike model is designed and tested to support a structural weight limit, which includes a cargo weight limit. As the weight of the rider approaches the structural weight limit of the bike, the allowable cargo weight might be reduced. For example, a bike may have a 55lb cargo weight limit, but if the weight of the rider is too close to the bike's structural weight limit, the rider may only be allowed to carry a smaller amount of cargo or no cargo at all. See following page for model-specific example and graphs.



Additionally, CEN (European Committee for Standardization) has braking distance weight limits, which require that the combined weight of the rider and cargo can be stopped within a specified distance. Exceeding the max weight per CEN braking standards does not mean that the bike will not stop, but that it might not stop within the distance specified by CEN.

The following information contains structural weight limits for frames, as well as recommended weight limits based on CEN standards for safe stopping distances. This information will also help determine if the rider and cargo weights are within the weight limits outlined in the Bike Model / Rider Weight Table (pages 5-6).

## UNDERSTANDING WEIGHT LIMITS

### FRAME STRUCTURAL WEIGHT LIMITS

Structural weight limits for each bike are determined by Specialized Bicycles through extensive lab testing, and are listed in the Bike Model / Rider Weight Table.



**STRUCTURAL WEIGHT LIMIT:** The maximum weight (rider and cargo) a bike can physically support. This limit is different from the **MAX WEIGHT PER CEN BRAKING STANDARDS** (see below).



**RIDER WEIGHT:** The weight of the rider in riding gear (e.g., jacket, helmet cam, hydration pack, helmet, etc.).



**CARGO WEIGHT:** The weight of any additional accessories (e.g., panniers, rear racks, saddle bags, handlebar bags, baskets, etc.) not accounted for in Rider Weight.

**CARGO WEIGHT LIMIT:** The maximum cargo weight a bike has been tested to support structurally.



**TOTAL WEIGHT:** The sum of **Rider Weight** and **Cargo Weight**.

### MAX WEIGHT PER CEN BRAKING STANDARDS

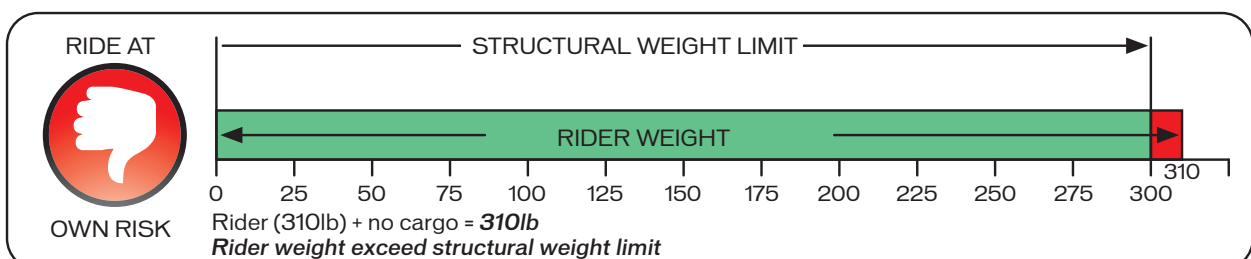
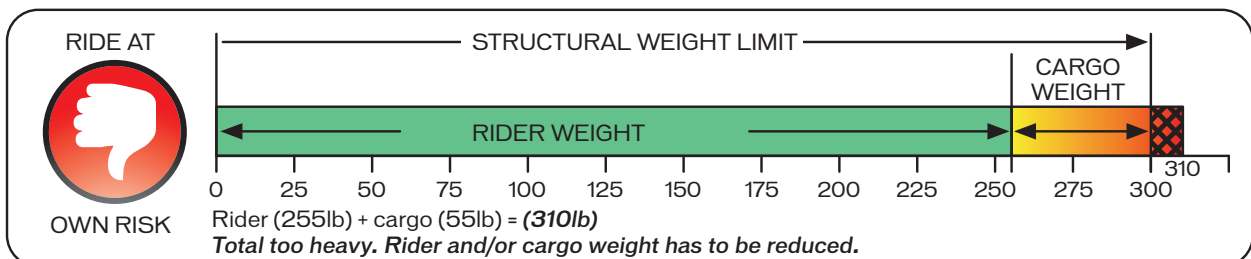
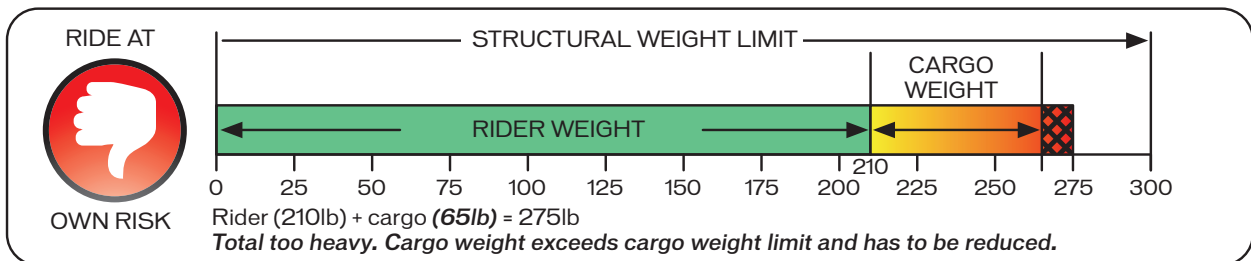
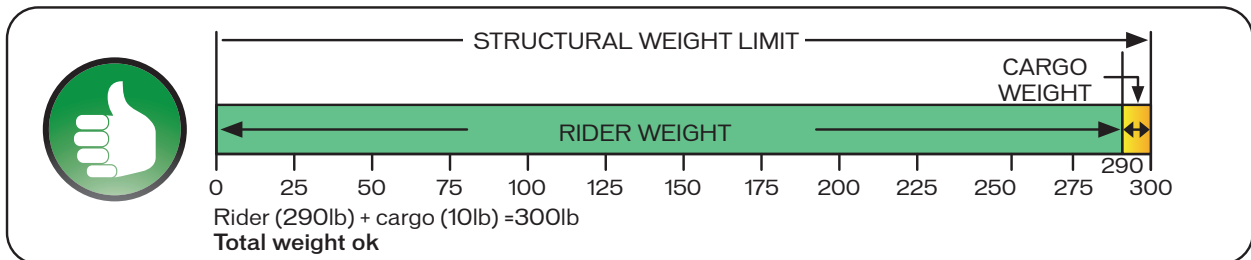
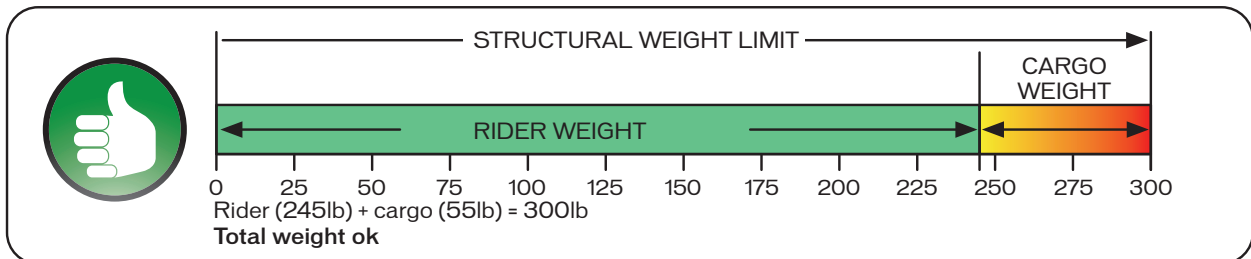
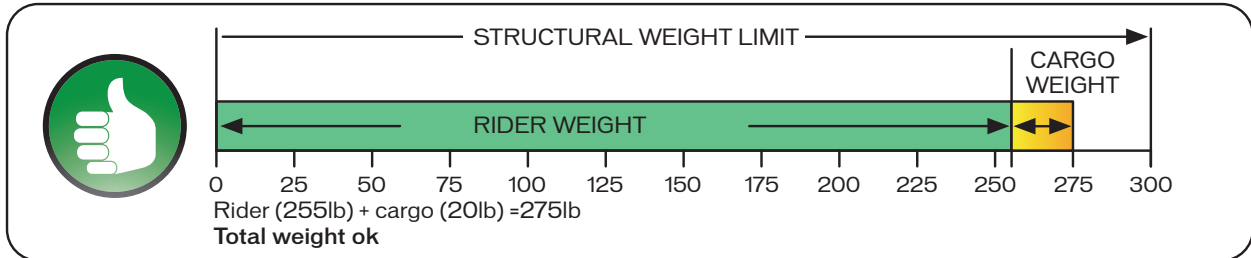
Each bike model is tested to determine the maximum amount of weight (combined weight of **Rider** and **Cargo**) that can be applied to a bike and the capability to stop the bike within a prescribed distance.

In situations where the weight limit for CEN braking standards does not exceed the structural weight limit, the maximum allowable weight limit is determined by the braking limit. In all other cases, the maximum allowable weight limit is determined by the structural weight limit.

## DETERMINING MAXIMUM ALLOWABLE WEIGHT LIMITS

1. Find your bike in the Bike Model / Rider Weight Table.
2. Lookup the cargo weight limit and the **Maximum Allowable Weight Limit** of the bike model.
3. Determine the rider weight, which includes all riding gear.
4. Determine the cargo weight, which includes the weight of any additional accessories.
5. Subtract the rider weight from the recommended max weight. The result is the amount the rider is allowed for cargo weight, up to the cargo weight limit prescribed for the bike model.

**EXAMPLE: HARDROCK (Maximum Allowable Weight Limit = 300lb / 136kg. Cargo Weight Limit = 55lb / 25kg)**



## INTENDED USE OF YOUR BICYCLE

**WARNING:** Understand your bike and its intended use. Choosing the wrong bicycle for your purpose can be hazardous. Using your bike the wrong way is dangerous.

No single type of bicycle is suited for all purposes. Your retailer can help you pick the “right tool for the job” and help you understand its limitations. There are many types of bicycles and many variations within each type. There are many types of mountain, road, racing, hybrid, touring, cyclocross and tandem bicycles.

There are also bicycles that mix features. For example, there are road/racing bikes with triple cranks. These bikes have the low gearing of a touring bike, the quick handling of a racing bike, but are not well suited for carrying heavy loads on a tour, for which, you want a touring bike.

Within each of type of bicycle, one can optimize the bicycle for certain purposes. Visit your bicycle shop and find someone with expertise in the area that interests you. Do your own homework. Seemingly small changes such as the choice of tires can improve or diminish the performance of a bicycle for a certain purpose.

On the following pages, we generally outline the intended uses of all bike types and, based in part on max weight per CEN braking standards, we specify the maximum rider weights by bike family/model.

**Industry usage conditions are generalized and evolving. Consult your dealer about how you intend to use your bike.**

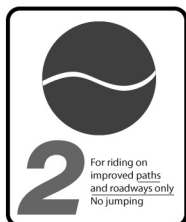
### HIGH-PERFORMANCE ROAD



- **CONDITION 1:** Bikes designed for riding on a paved surface where the tires do not lose ground contact.
- **INTENDED:** To be ridden on paved roads only.
- **NOT INTENDED:** For off-road, cyclocross, or touring with racks or panniers.
- **TRADE OFF:** Material use is optimized to deliver both light weight and specific performance. You must understand that (1) these types of bikes are intended to give an aggressive racer or competitive cyclist a performance advantage over a relatively short product life, (2) a less aggressive rider will enjoy longer frame life, (3) you are choosing light weight (shorter frame life) over more frame weight and a longer frame life, (4) you are choosing light weight over more dent resistant or rugged frames that weigh more. All frames that are very light need frequent inspection. These frames are

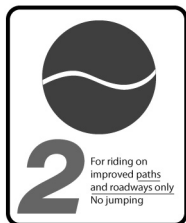
likely to be damaged or broken in a crash. They are not designed to take abuse or be a rugged workhorse. See also Appendix B.

### GENERAL PURPOSE RIDING



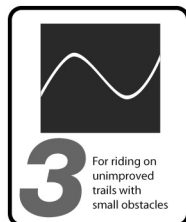
- **CONDITION 2:** Bikes designed for riding Condition 1, plus smooth gravel roads and improved trails with moderate grades where the tires do not lose ground contact.
- **INTENDED:** For paved roads, gravel or dirt roads that are in good condition, and bike paths.
- **NOT INTENDED:** For off-road or mountain bike use, or for any kind of jumping. Some of these bikes have suspension features, but these features are designed to add comfort, not off-road capability. Some come with relatively wide tires that are well suited to gravel or dirt paths. Some come with relatively narrow tires that are best suited to faster riding on pavement. If you ride on gravel or dirt paths, carry heavier loads or want more tire durability talk to your dealer about wider tires.

### CYCLO-CROSS



- **CONDITION 2:** Bikes designed for riding Condition 1, plus smooth gravel roads and improved trails with moderate grades where the tires do not lose ground contact.
- **INTENDED:** For cyclo-cross riding, training and racing. Cyclo-cross involves riding on a variety of terrain and surfaces including dirt or mud surfaces. Cyclo-cross bikes also work well for all weather rough road riding and commuting.
- **NOT INTENDED:** For off road or mountain bike use, or jumping. Cyclo-cross riders and racers dismount before reaching an obstacle, carry their bike over the obstacle and then remount. Cyclo-cross bikes are not intended for mountain bike use. The relatively large road bike size wheels are faster than the smaller mountain bike wheels, but are not as strong.

### CROSS-COUNTRY, MARATHON, HARDTAILS



- **CONDITION 3:** Bikes designed for riding Conditions 1 and 2, plus rough trails, small obstacles, and smooth technical areas, including areas where momentary loss of tire contact with the ground may occur. NOT for jumping. All mountain bikes without rear suspension are Condition 3, as well as some lightweight rear suspension models.
- **INTENDED:** For cross-country riding and racing which ranges from mild to aggressive over intermediate terrain (e.g., hilly with small obstacles like roots, rocks, loose surfaces, hard pack and depressions). Cross-country and marathon equipment (tires, shocks, frames, drive trains) are light-weight, favoring nimble speed over brute force. Suspension travel is relatively short since the bike is intended to move quickly on the ground.
- **NOT INTENDED:** For Hardcore Freeriding, Extreme Downhill, Dirt Jumping, Slopestyle, or very aggressive or extreme riding. Not for spending time in the air, landing hard and hammering through obstacles.

• **TRADE OFF:** Cross-Country bikes are lighter, faster to ride uphill, and more nimble than All-Mountain bikes. Cross-Country and Marathon bikes trade off some ruggedness for pedaling efficiency and uphill speed.

## ALL MOUNTAIN



- **CONDITION 4:** Bikes designed for riding Conditions 1, 2, and 3, plus rough technical areas, moderately sized obstacles, and small jumps.

- **INTENDED:** For trail and uphill riding. All-Mountain bicycles are: (1) more heavy duty than cross country bikes, but less heavy duty than Freeride bikes, (2) lighter and more nimble than Freeride bikes, (3) heavier and have more suspension travel than a cross country bike, allowing them to be ridden in more difficult terrain, over larger obstacles and moderate jumps, (4) intermediate in suspension travel and use components that fit the intermediate intended use, (5) cover a fairly wide range of intended use, with models that are more or less heavy duty. Talk to your retailer about your needs and these models.

- **NOT INTENDED:** For use in extreme forms of jumping/riding such as hardcore mountain, Freeriding, Downhill, North Shore, Dirt Jumping, Hucking etc. Not for large drop offs, jumps or launches (wooden structures, dirt embankments) requiring long suspension travel or heavy duty components; and not for spending time in the air landing hard and hammering through obstacles.

- **TRADE OFF:** All-Mountain bikes are more rugged than cross country bikes, for riding more difficult terrain. All-Mountain bikes are heavier and harder to ride uphill than cross country bikes. All-Mountain bikes are lighter, more nimble and easier to ride uphill than Freeride bikes. All-Mountain bikes are not as rugged as Freeride bikes and must not be used for more extreme riding and terrain.

## GRAVITY, FREERIDE AND DOWNHILL



- **CONDITION 5:** Bikes designed for jumping, hucking, high speeds, or aggressive riding on rougher surfaces, or landing on flat surfaces. However, this type of riding is extremely hazardous and puts unpredictable forces on a bicycle which may overload the frame, fork, or parts. If you choose to ride in Condition 5 terrain, you should take appropriate safety precautions such as more frequent bike inspections and replacement of equipment. You should also wear comprehensive safety equipment such as a full-face helmet, pads, and body armor.

- **INTENDED:** For riding that includes the most difficult terrain that only very skilled riders should attempt. Gravity, Freeride, and Downhill are terms which describe hardcore mountain, north shore, slopestyle. This is "extreme" riding and the terms describing it are constantly evolving.

Gravity, Freeride, and Downhill bikes are: (1) heavier and have more suspension travel than All-Mountain bikes, allowing them to be ridden in more difficult terrain, over larger obstacles and larger jumps, (2) the longest in suspension travel and use components that fit heavy duty intended use. There is no guarantee that extreme riding will not break a Freeride bike.

 **The terrain and type of riding that Freeride bikes are designed for is inherently dangerous. Appropriate equipment, such as a Freeride bike, does not change this reality. In this kind of riding, bad judgment, bad luck, or riding beyond your capabilities can easily result in an accident, where you could be seriously injured, paralyzed or killed.**

- **NOT INTENDED:** To be an excuse to try anything. Read Section 2. F of the Bicycle Owner's Manual, p. 12.

- **TRADE OFF:** Freeride bikes are more rugged than All-Mountain bikes, for riding more difficult terrain. Freeride bikes are heavier and harder to ride uphill than All-Mountain bikes.

## DIRT JUMP



- **CONDITION 5:** Bikes designed for jumping, hucking, high speeds, or aggressive riding on rougher surfaces, or landing on flat surfaces. However, this type of riding is extremely hazardous and puts unpredictable forces on a bicycle which may overload the frame, fork, or parts. If you choose to ride in Condition 5 terrain, you should take appropriate safety precautions such as more frequent bike inspections and replacement of equipment. You should also wear comprehensive safety equipment such as a full-face helmet, pads, and body armor.

- **INTENDED:** For man-made dirt jumps, ramps, skate parks other predictable obstacles and terrain where riders need and use skill and bike control, rather than suspension. Dirt Jumping bikes are used much like heavy duty BMX bikes.

A Dirt Jumping bike does not give you skills to jump. Read Section 2. F of the Bicycle Owner's Manual, p. 12.

- **NOT INTENDED:** For terrain, drop offs or landings where large amounts of suspension travel are needed to help absorb the shock of landing and help maintain control.




- **TRADE OFF:** Dirt Jumping bikes are lighter and more nimble than Freeride bikes, but they have no rear suspension and the suspension travel in the front is much shorter.




## KIDS



Bikes designed to be ridden by children. Parental supervision is required at all times. Avoid areas involving automobiles, and obstacles or hazards including inclines, curbs, stairs, sewer grates or areas near drop-offs or pools.

The Hotwalk Owner's Manual is available as a separate document, supplied with the Hotwalk bikes

BIKE MODEL / RIDER WEIGHT TABLE			MAXIMUM CARGO WEIGHT	MAXIMUM ALLOWABLE WEIGHT <sup>4,5</sup>
		CATEGORY (See Intended Use Page 3)	 lb/kg	
Alias	All Models	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Allez	S-Works	1	30 / 14 <sup>2</sup>	240 / 109 <sup>3</sup>
	Expert, Race, Elite INT, Sport INT, Comp	1	30 / 14 <sup>2</sup>	275 / 125
	Elite, Sport, Base *	1	30 / 14 <sup>2</sup>	220 / 100 <sup>3 *</sup>
Amira	Sport, Sora *	1	5 / 2.3 <sup>1</sup>	220 / 100 <sup>3 *</sup>
	S-Works, Pro, Expert, Comp	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Ariel	All Models	2	55 / 25	300 / 136
AWOL	AWOL Rare	2	55 / 25	300 / 136
Camber FSR	S-Works, Expert	4	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Comp Carbon	4	5 / 2.3 <sup>1</sup>	275 / 125
	EVO, Comp, Base	4	5 / 2.3 <sup>1</sup>	300 / 136
Crave	All Models	3	30 / 14 <sup>2</sup>	300 / 136
Crossover	All Models	2	55 / 25	300 / 136
Crossroads	All Models	2	55 / 25	300 / 136
CrossTrail	All Models	2	55 / 25	300 / 136
CruX	S-Works, Pro, Expert, Elite	2	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Sport Carbon 105	2	5 / 2.3 <sup>1</sup>	275 / 125
	Sport Apex Disc	2	30 / 14 <sup>2</sup>	275 / 125
	Sora *	2	30 / 14 <sup>2</sup>	220 / 100 <sup>3 *</sup>
Daily	All Models *	2	55 / 25	220 / 100 <sup>3 *</sup>
Demo FSR	S-Works	5	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	I, II	5	5 / 2.3 <sup>1</sup>	300 / 136
	I Carbon	5	5 / 2.3 <sup>1</sup>	275 / 125
Dolce	Comp INT, Elite INT, Sport INT (Shimano Brakes)	1	55 / 25	275 / 125
	Comp, Elite, Sport, Base *	1	55 / 25	220 / 100 <sup>3 *</sup>
Enduro FSR	S-Works, Expert Carbon	4	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Expert EVO, Comp, EVO	4	5 / 2.3 <sup>1</sup>	300 / 136
Epic FSR	S-Works, Marathon Carbon, Expert Carbon	3	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Comp Carbon	3	5 / 2.3 <sup>1</sup>	275 / 125
	Comp	3	5 / 2.3 <sup>1</sup>	300 / 136
Expedition	Base, all models	2	55 / 25	300 / 136
	Step Through, all models	2	55 / 25	240 / 109
Fatboy	All Models	3	55 / 25	275 / 125
Fate	All Models	3	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Hardrock	All Models	3	55 / 25	300 / 136
Hotrock	24" XC Models	3	55 / 25	220 / 100
	24" 21spd, 7spd, street; 20" 6spd, Coaster	6	30 / 14 <sup>2</sup>	220 / 100
	16" and 12" Coasters	6	30 / 14 <sup>2</sup>	100 / 45
	Hotwalk boy/girl	6	0 / 0	40 / 18
Jett	All Models	3	55 / 25	300 / 136
Langster	Pro	1	30 / 14 <sup>2</sup>	240 / 109 <sup>3</sup>
	Base *	1	30 / 14 <sup>2</sup>	265/120 <sup>3 *</sup>
	Street *	1	30 / 14 <sup>2</sup>	220 / 100 <sup>3 *</sup>

BIKE MODEL / RIDER WEIGHT TABLE			MAXIMUM CARGO WEIGHT	MAXIMUM ALLOWABLE WEIGHT <sup>4,5</sup>
		CATEGORY (See Intended Use Page 3)	 lb/kg	
Myka HT	All Models	3	55 / 25	300 / 136
P.Series	P.Slope, P.3, P.26 AM, P.Street	5	0 / 0	300 / 136
	P.20, P.18, P.Grom	5	0 / 0	220 / 100
Rockhopper	All Models	3	55 / 25	300 / 136
Roll	All Models *	1	30 / 14 <sup>2</sup>	220 / 100 <sup>3 *</sup>
Roubaix	All Models	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Ruby	All Models	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Rumor FSR	All Models	4	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Safire FSR	All Models	3	5 / 2.3 <sup>1</sup>	300 / 136
Secteur	Expert	1	55 / 25	240 / 109 <sup>3</sup>
	Comp, Elite, Sport INT, Sport Disc	1	55 / 25	275 / 125
	Base, X3, Sport *	1	55 / 25	220 / 100 <sup>3 *</sup>
Shiv	All Models *	1	5 / 2.3 <sup>1</sup>	220 / 100 <sup>3 *</sup>
Sirus	Pro, SL4, Expert	1	55 / 25	240 / 109 <sup>3</sup>
	Comp Disc, Elite Disc, Elite INT, Sport, Sport Disc	2	55 / 25	300 / 136
	Comp, Comp Carbon, Elite, Base *	2	55 / 25	265 / 120 <sup>3 *</sup>
SJ FSR	S-Works, Expert Carbon, Elite	4	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Comp Carbon	4	5 / 2.3 <sup>1</sup>	275 / 125
	Comp	4	5 / 2.3 <sup>1</sup>	300 / 136
SJ HT	S-Works, Marathon, Expert, Carbon SS	3	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	SJ HT Comp Carbon	3	5 / 2.3 <sup>1</sup>	275 / 125
	Comp, EVO	3	30 / 14 <sup>2</sup>	300 / 136
Source	LTD Disc, Pro Disc	2	55 / 25	275 / 125
	Eleven, Expert, Comp, Eight, Elite, Seven, Sport, Base	2	55 / 25	300 / 136
Status FSR	All Models	5	30 / 14 <sup>2</sup>	300 / 136
Tarmac	All Models	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Transition	All Models *	1	5 / 2.3 <sup>1</sup>	220 / 100 <sup>3 *</sup>
TriCross	Comp Disc	1	55 / 25	240 / 109 <sup>3</sup>
	Elite Disc, Sport Disc	1	55 / 25	275 / 125
	Base *	1	55 / 25	220 / 100 <sup>3 *</sup>
Turbo	All Models	2	55 / 25	300 / 136
Venge	All Models	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
Vita	Pro Carbon	1	5 / 2.3 <sup>1</sup>	240 / 109 <sup>3</sup>
	Expert Carbon	2	5 / 2.3 <sup>1</sup>	275 / 125
	Comp Carbon *	2	5 / 2.3 <sup>1</sup>	220 / 100 <sup>3 *</sup>
	Comp, Base Sport *	2	55 / 25	265 / 120 <sup>3 *</sup>
	Elite, Sport Disc	2	55 / 25	300 / 136
Work	All Models *	2	55 / 25	271 / 124 <sup>3 *</sup>

See following page for footnotes

<sup>1</sup> Seat Bag Only.

<sup>2</sup> For **ALLOY** bikes manufactured without original equipment dropout rack mounts: A rear rack can be installed with the use of separate rack mount clips. Cargo capacity with separate mounting clips is limited to 30lb / 14kg.


<sup>3</sup> STRUCTURAL WEIGHT LIMITS FOR FRAMES:

275lb / 125Kg	300lb / 126Kg
Drop bar equipped carbon or alloy road bikes	Alloy mountain bikes
Carbon or alloy cyclocross bikes	Flat bar equipped alloy hybrid / city bikes
Carbon or alloy triathlon / aero / time trial bikes	
Flat bar equipped carbon hybrid / city bikes	
Carbon mountain bikes	

- If any weight-bearing Specialized-branded carbon components (i.e. handlebar, seatpost, stem, crank, saddle, rim) are present, then the weight limit is 240lb / 109kg. This does not include non-weight-bearing carbon components such as brake levers, chainrings, bottle cages, etc.
- Roval wheels (complete wheelsets) are made to be lightweight, and are not suitable for all riders and all possible uses. If any Roval wheelsets are present, the rider (plus cargo) weight limit is 240lb (109Kg). Failure to follow this warning may result in a catastrophic failure of the wheel.
- \* **MODELS:** The **Maximum Allowable Weight Limit** for these models are determined by CEN standards for stopping distance. The **Structural Weight Limit** for a particular model can exceed this maximum limit for stopping distance (see STRUCTURAL WEIGHT LIMITS FOR FRAMES, above). If a rider's weight is above the **Maximum Allowable Weight Limit** but below the **Structural Weight Limit**, the rider would be able to use the bike from a structural standpoint, but with reduced braking that does not conform to CEN requirements.
- **IMPORTANT: Braking limits do not change regardless of carbon or alloy components.**

<sup>4</sup> Recommended max weights are based on European (CEN) testing standards (for cargo and rider only).

<sup>5</sup> CEN braking standards are based on the brakes specified on the bike models from the manufacturer. Changing the brakes can result in an increase or decrease in the braking distance.

 **WARNING:** For riders at the **RIDER WEIGHT LIMIT**, you may not be able to carry cargo if the **TOTAL WEIGHT LIMIT** is exceeded.



# INSTRUCTION GUIDE


## S-WORKS ROAD CARBON CRANKSET (Carbon and Alloy OSBB cups)





THIS BRIEF INSTRUCTION GUIDE CONTAINS IMPORTANT INFORMATION.  
PLEASE READ CAREFULLY AND STORE IN A SAFE PLACE.

Congratulations! The S-Works Carbon crankset you have chosen is among the finest advanced composite products available in cycling. Carbon fiber is a very special material that requires particular care during assembly, storage and riding. This instruction guide contains instructions and warnings, plus torque specifications, to be used in conjunction with the owner's manuals and instruction guides supplied with your bicycle.

Please visit <http://servicevideos.specialized.com/> for instructional videos.

 **WARNING!** Failure to follow these instructions may result in a catastrophic failure of the crank, frame and/or its components while riding, which may result in serious personal injury or death.


 **WARNING!** Bicycle assembly is a complicated task which requires training and experience. Do not attempt installation of any component if you do not have experience and training as a bicycle mechanic. Failure to follow this warning may result in serious personal injury or death. Reference should also be made to Barnett's or some other comprehensive bicycle manual.

 **WARNING!** Failure to follow the torque specifications in this instruction guide will void your warranty, but most importantly may result in damage to the crank, which may not be visible. If the crank is damaged, this can result in loss of structural integrity, which may result in serious personal injury or death. To ensure the best assembly possible and to prevent any damage to the crank components, follow all torque specifications.

### TOOLS REQUIRED:

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>■ 1.5mm, 4mm, 6mm and 12mm Allen key</li><li>■ T25, T30 and T45 Torx key</li><li>■ 17mm and 20mm wrench</li><li>■ Torque wrench (3/8" socket)</li><li>■ Ratchet wrench (3/8" socket)</li><li>■ High quality grease</li></ul> | <ul style="list-style-type: none"><li>■ OSBB Bearing Press Tool (S125300012) or...</li><li>■ Specialized MindSet Headset Bearing Press (#9895-3045)</li><li>■ Specialized Carbon Crank Tool Kit (Bearing pullers, locking tool, 6mm Allen and T45 Torx keys, 8mm-to-3/8" adapter - #9891-3000)</li><li>■ <b>3M DP 420</b> Epoxy packet (includes epoxy, alcohol wipe and applicator)</li><li>■ Threadlocker (Blue 242, Green 640)</li></ul> |
|--|---|

### FRAME PREPARATION

 **CAUTION:** Do not face or ream bottom bracket shell! This can possibly prevent proper installation of the crank. Your Specialized frame does not require any bottom bracket shell pre-installation preparation, as all surfaces have been precisely machined to specific tolerances at the factory for proper interface with the S-Works Carbon crankset.


### CHAINRING INSTALLATION

To achieve optimal shifting, it's very important to ensure proper pairing and orientation of the chainrings. Chainrings are offered in several different configurations. Spiders are offered in alloy or carbon, in 110mm or 130mm BCD options. Contact your Specialized Authorized Dealer, or visit [www.specialized.com](http://www.specialized.com) for available options.

SRM kits are available separately through SRM. Cranks and rings sold separately.

Specialized chainrings are paired specifically to ensure that the clocking of the teeth match properly between the large and small ring. Mixing various configurations of chainrings can result in poor shifting performance.

- To achieve optimal shifting performance, ensure that the counter-sunk surfaces of the bolt holes are facing away from each other.
- The large chainring pin and the small chainring "bump" must line up with the crank arm (see "INSTALLING THE SPIDER AND LOCKRING", P.4).
- The S-Works carbon spider bolt holes require proprietary Specialized chainring bolts (# S091600017). Apply blue threadlocker, use T30 Torx and flat head screwdriver.
- **Standard chainring bolts:** Use T30 Torx and 6mm Allen keys to tighten or loosen the bolts.
- **Recommended torque for chainring bolts: 87 in-lbf (9.8 N\*m).**

 **WARNING!** Great care should be taken to not damage carbon fiber or composite material. Any damage may result in a loss of structural integrity, which may result in a catastrophic failure. This damage may or may not be visible in inspection. Before each ride, and after any crash, you should carefully inspect your crank for any fraying, gouging, scratches through the paint, chipping, bending, or any other signs of damage. Do not ride if your crank shows any of these signs. After any crash, and before you ride any further, take your bicycle to an Specialized Authorized Dealer for a complete inspection.

### WARRANTY

For the complete warranty provisions, please refer to [www.specialized.com](http://www.specialized.com).

### COMPATIBILITY

Carbon frames with 61mm width carbon OSBB bottom bracket shell and press-in cups p.2

Carbon frames with 68mm width alloy OSBB bottom bracket shell and snap-ring slots p.3

Additional documents:

- After-market crank compatibility / adapter instruction guide
- Carbon road frame instruction guide

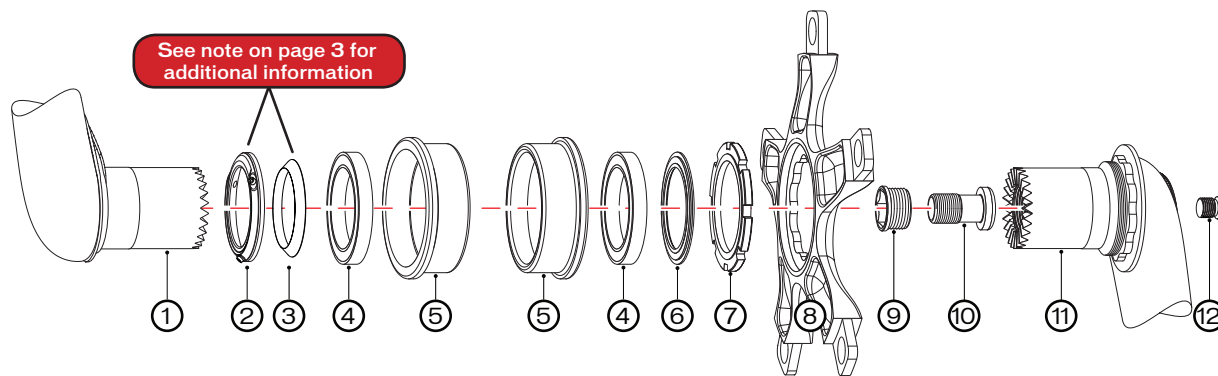
#### SPECIALIZED BICYCLE COMPONENTS

15130 Concord Circle, Morgan Hill, CA 95037 (408) 779-6229  
IG0338 Rev.C, December 2012

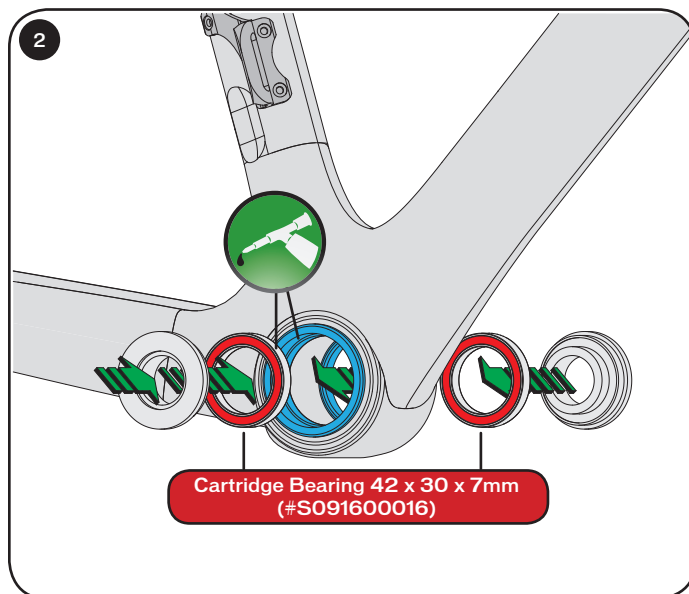
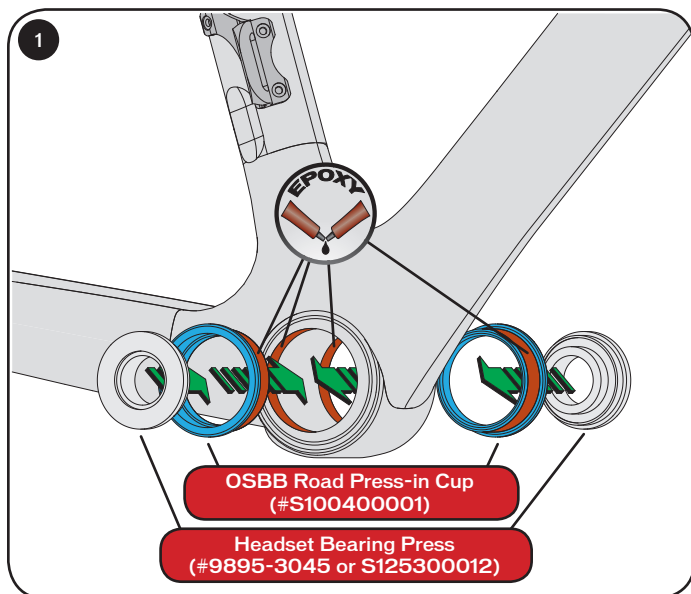
Please note all instructions are subject to change for improvement without notice.  
Please visit [www.specialized.com](http://www.specialized.com) for periodic tech updates.  
Feedback: [techdocs@specialized.com](mailto:techdocs@specialized.com)

## INSTALLING THE BOTTOM BRACKET (61 x 46mm BB shell, press-in cups)

The following setup is for frames with 61mm width carbon shells that require press-in cups.



- |  |   |   |                          |
|--|---|---|--------------------------|
| 1. Non-drive-side crank arm <sup>2</sup> | 2. Non-drive-side adjustable cover <sup>2</sup> | 3. Non-drive-side conical spacer <sup>2</sup>   | 1 Road or MTB compatible |
| 4. 42 x 30 x 7mm bearing <sup>1</sup>    | 5. OSBB press-in cup <sup>2</sup>               | 6. Drive-side alloy bearing spacer <sup>2</sup> | 2 Road compatible only   |
| 7. Spider locking <sup>1</sup>           | 8. Drive-side crank arm spider <sup>2</sup>     | 9. Steel retainer nut <sup>1</sup>              |                          |
| 10. M12 steel center bolt <sup>2</sup>   | 11. Drive-side crank arm <sup>2</sup>           | 12. Drive-side crank cover screw <sup>1</sup>   |                          |



1. Remove any grease from the carbon bottom bracket shell.
2. Finish cleaning the bottom bracket shell with an alcohol wipe.
3. **Prepare the cranks for installation:** Pre-install the spider, chainrings, spindle nut and spindle bolt. Pre-grease and install the crank parts in the correct order as shown on page 4.

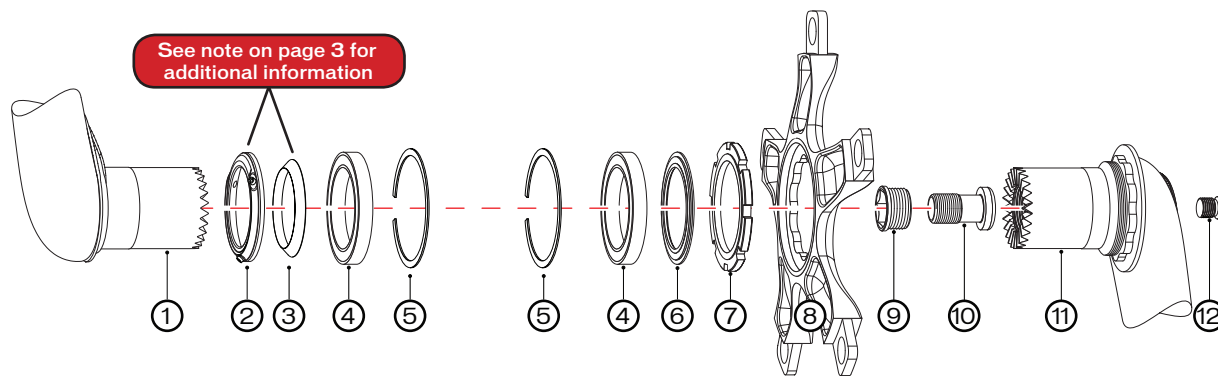
**NOTE:** Due to the 20 minute work time of the epoxy, the cranks must be installed immediately after the cups are installed, to ensure that the cups, bearings and crank are aligned.

4. Fully mix the **3M DP 420** 2-part epoxy, then apply the epoxy to the outer surface of the OSBB cups and the first 10mm of the inner diameter of the carbon bottom bracket shell.
5. Press the cups into the bottom bracket shell until the cups lightly bottom out against the frame (**fig.1**). Use either the Specialized Bottom Bracket Bearing Press (**S125300012**) or the Mindset Headset Bearing Press tool (**9895-3045**). When using the 9895-3045 tool, either use a Park Headset Press Tool or a bench-mounted vise to press the cups into the frame. Be sure to press the cups evenly into the frame.
6. Wipe off the excess epoxy from the inside and outside flanges of the cups. Use an alcohol wipe to clean off any remaining residue.
7. Apply grease to the outer diameter of the OSBB bearings, then press them into the cups using the same tool that pressed the cups into the frame (**fig.2**). Be sure to press the bearings in straight. Do not force the bearings into the cup. Wipe any last epoxy residue from the outside of the cup.
8. Once the bearings bottom out inside the cups, do not apply any more pressure. Excess force can damage the cups and can cause the bearings to spin roughly.
9. To remove the cups from the frame, pull the bearings out as shown on page 5, then lightly tap the backside of the cups in a circular pattern with a large flat surface. Do not use a screwdriver, as it may damage the cups.
10. Before installing new cups with new epoxy, remove any excess epoxy lips that may have formed at the inside and outside edges of the cups.

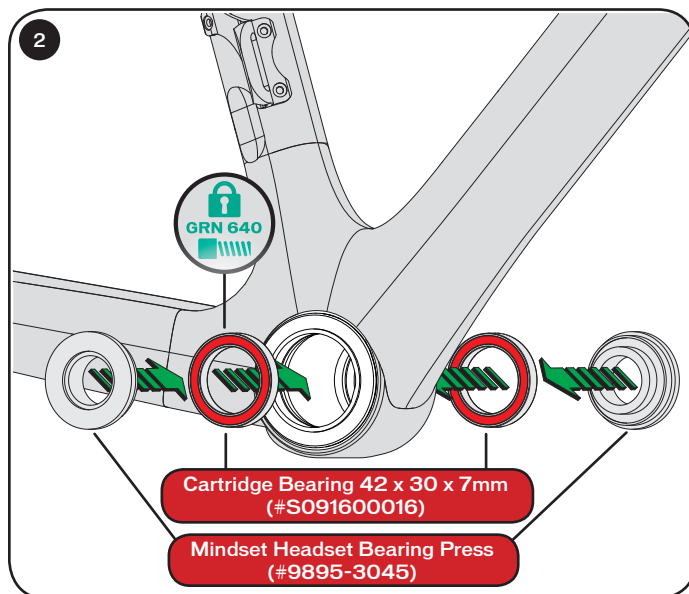
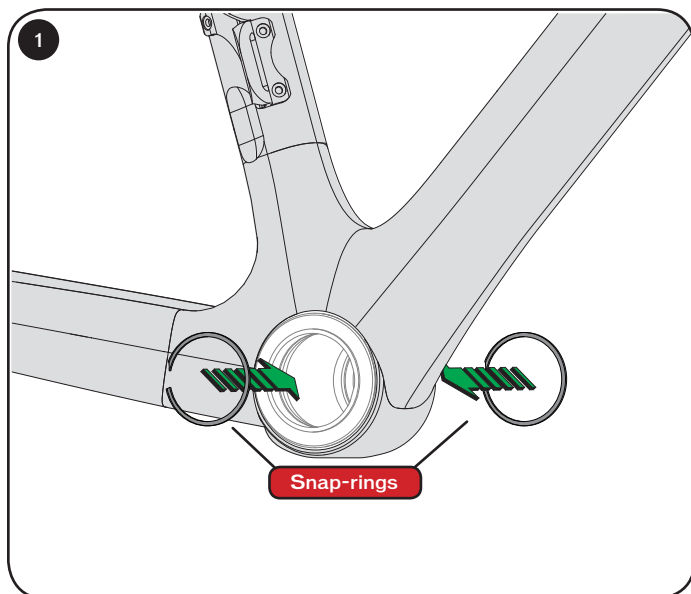
**TECH TIP:** Any thin epoxy residue that remains on the contact area of the carbon shell should not be removed. This thin film of epoxy residue can actually benefit the bond of fresh epoxy when installing new cups.

## INSTALLING THE BOTTOM BRACKET (68 x 42mm alloy BB shell, with circlips)

The following setup is for frames with 68mm width alloy shells that require snap-rings.

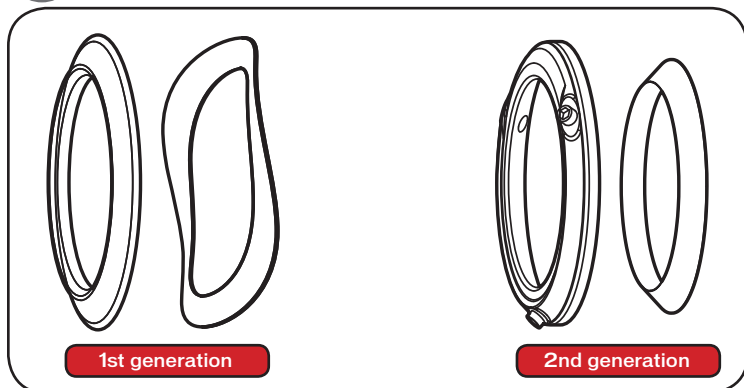


- |  |   |   |                          |
|--|---|---|--------------------------|
| 1. Non-drive-side crank arm <sup>2</sup> | 2. Non-drive-side adjustable cover <sup>2</sup> | 3. Non-drive-side conical spacer <sup>2</sup>   | 1 Road or MTB compatible |
| 4. 42 x 30 x 7mm bearing <sup>1</sup>    | 5. Snap-ring <sup>1</sup>                       | 6. Drive-side alloy bearing spacer <sup>2</sup> | 2 Road compatible only   |
| 7. Spider locking <sup>1</sup>           | 8. Drive-side crank arm spider <sup>2</sup>     | 9. Steel retainer nut <sup>1</sup>              |                          |
| 10. M12 steel center bolt <sup>2</sup>   | 11. Drive-side crank arm <sup>2</sup>           | 12. Drive-side crank cover screw <sup>1</sup>   |                          |



1. Install the snap-rings into the snap-ring grooves in the BB shell (fig.1).
2. Apply green threadlocker # 640 to the outer diameter of the OSBB Bearings and inner diameter of the OSBB shell.
3. Press the bearings into the shell (fig.2). Be sure to press the bearings in straight, use a bearing press tool (9895-3045 or S125300012) to guide the bearings in straight. Do not force the bearing into the shell.
4. Once the bearings have bottomed out against the snap-rings, do not apply any more pressure. Too much force applied to the bearings once bottomed out can cause damage to the snap-rings and can cause the bearings to spin roughly.

**i** NOTE: Earlier generation cranks are equipped with a cap and wave washer. Newer generation cranks are equipped with an adjustable cover and conical spacer (#2 and #3). The adjustable cover and conical spacer are available separately to replace the cap and wave washer.



# INSTALLING THE SPIDER AND LOCKRING

## SPIDER LOCKRING ASSEMBLY

## SPIDER & CHAINRING ALIGNMENT

250 in-lbf  
28.2 N\*m

OUTSIDE

BLUE 242

- Use blue threadlocker #242 on locking threads.
- Install locking with step facing out.

**NOTE:** Orientation text must be visible once installed.

87 in-lbf  
9.8 N\*m

6mm

T30

- Spider chamfer
- Drive-side crank arm
- Small ring bump
- Large ring pin

# INSTALLING THE CRANKSET (73 x 46mm BB shell, press-in cups)

1

NOTE: Crank bolt is MTB- or Road-specific.  
MTB Bolt: 20g (small hole)  
Road Bolt: 16g (large hole)

2 3

Conical sides face each other

6

Step side faces bearing

- Install the non-drive-side cover (2) and conical spacer (3) on the non-drive-side spindle. The cover only fits one way, with the "ALIGN CRANK" text hidden by the crank arm.
- Install the bearing spacer (6) on the drive-side spindle.

2

12mm

(Reverse thread)

BLUE 242

Bottom Bracket Shell

- Liberally grease the spacers, bolt threads and spline surfaces before installation.
- To increase torque accuracy, ensure that the bolt head surface is greased.

3

300 in-lbf  
33.9 N\*m

6mm

≤ 2010

≥ 2011

300 in-lbf  
33.9 N\*m

T45

- Tighten using a 6mm Socket Allen Key with Torque Wrench.

4

Non-drive-side cover

Crk arm

1.5mm

4mm

≤ 2010

≥ 2011

6mm

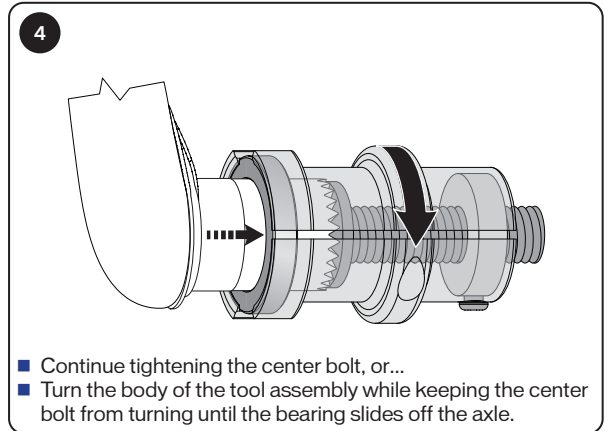
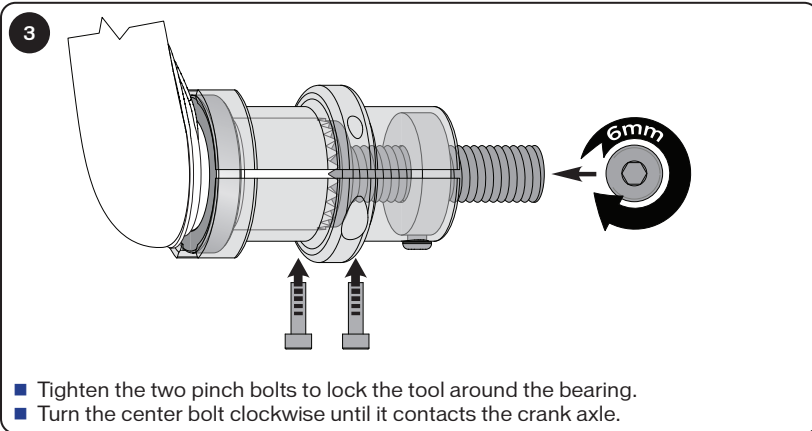
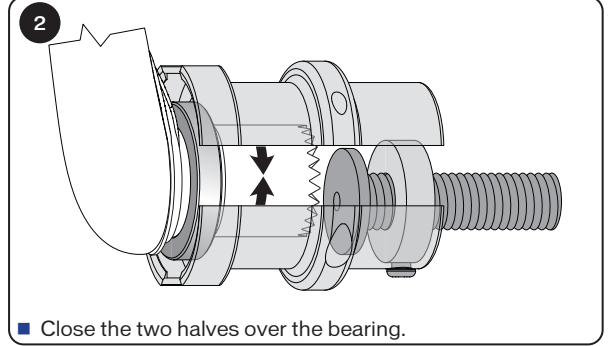
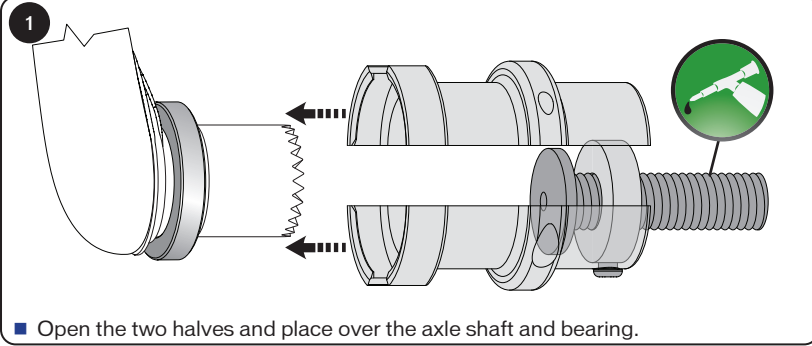
- Install the bolt hole cover screw. Hand tighten lightly.
- Adjust the preload on the non-drive-side cover by tightening the three 1.5mm Allen screws in an even, alternating pattern, until there is no lateral movement in the crank, and the bearings still spin freely. Do not overtighten.

**Crank arm removal: reverse steps 3 & 4.**

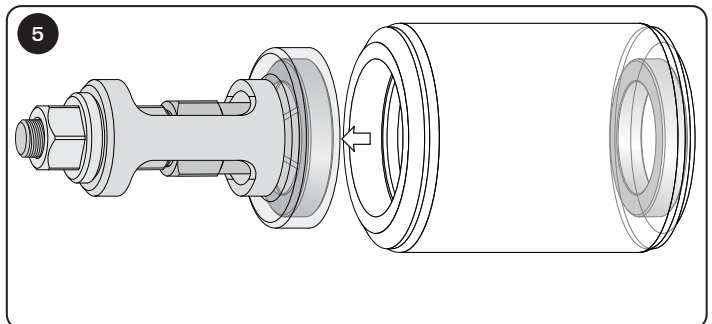
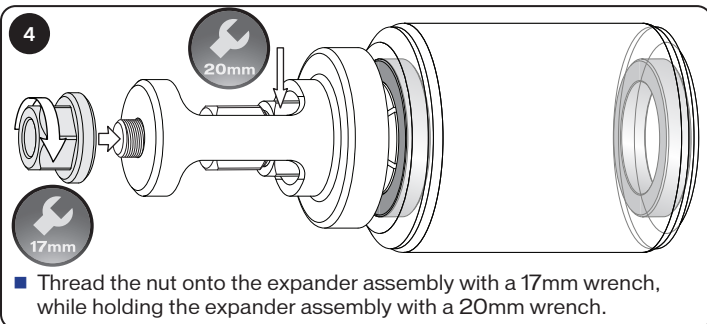
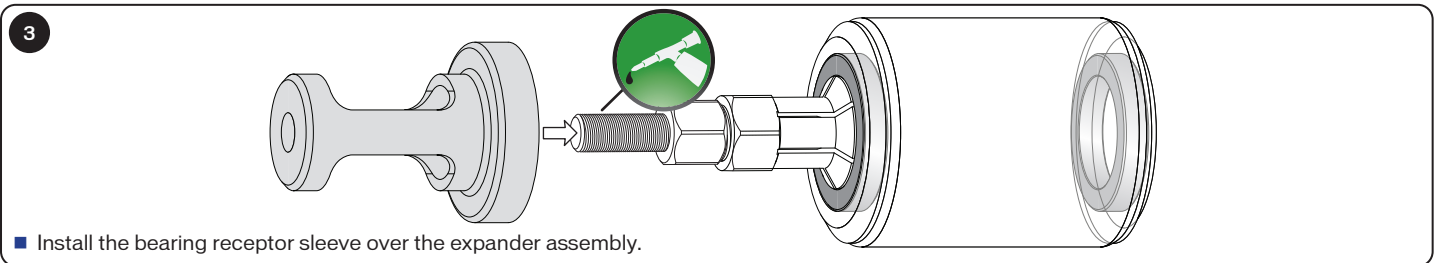
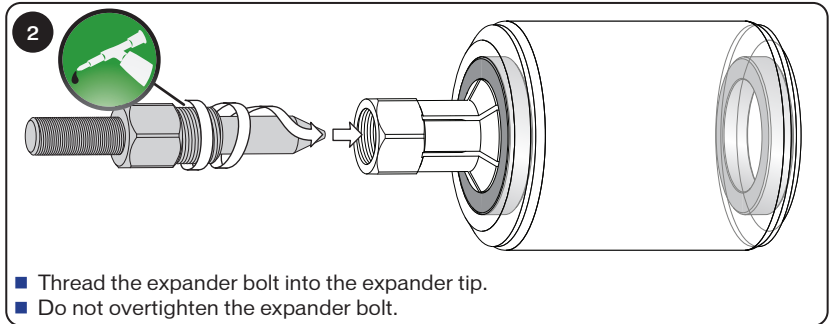
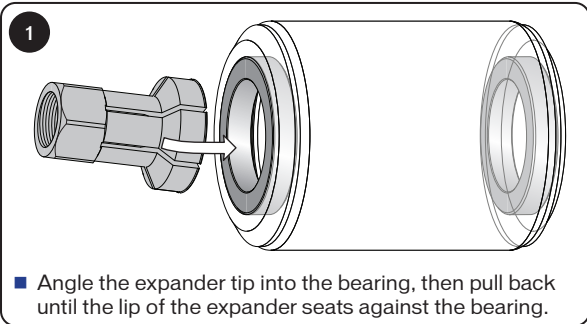


## REMOVING THE BEARINGS FROM THE CRANK SPINDLE

**NOTE:** Removal of the crank arms can result in the bearings remaining in the BB shell or on the spindle. Choose the according tool for the job.



## REMOVING THE BEARINGS FROM THE BOTTOM BRACKET SHELL



# INSTRUCTION GUIDE

## INTERNAL CABLE ROUTING - SHIFTER & BRAKE (TARMAC SL4 / ROUBAIX SL4 / AMIRA SL4 / RUBY / CRUX CARBON)



THIS INSTRUCTION GUIDE CONTAINS IMPORTANT INFORMATION.  
PLEASE READ CAREFULLY AND STORE IN A SAFE PLACE.

**WARNING!** Please read the following instructions. Bicycle assembly is a complicated task, which requires training and experience. If you have any doubt regarding your mechanical ability and/or installation of this product, visit your Specialized Authorized Dealer. Specialized recommends that the cable system be installed by a qualified mechanic. Failure to follow this warning may result in serious personal injury or death.

**i** Please read the following warnings. Failure to follow the warnings in this instruction guide may result in a catastrophic failure, resulting in serious personal injury or death. This phrase may not be repeated in connection with each and every warning.

Please visit <http://servicevideos.specialized.com/> for instructional videos.

### WARRANTY

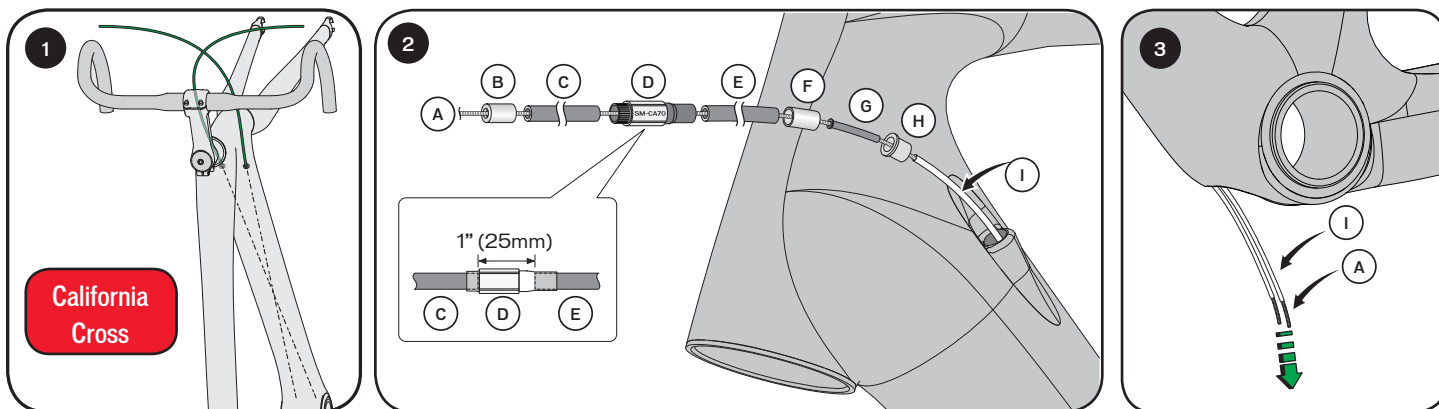
For the warranty provisions of this product, please visit [www.specialized.com](http://www.specialized.com).

## MECHANICAL SHIFTING

### PRE-INSTALLING THE CABLE AND HOUSING

- **Frames with cables pre-installed:** Routing sheaths are included in the box for future cable replacements.
- **Frames without cables pre-installed:** Routing sheaths are pre-installed in the frame to facilitate the routing of the cable through the frame.
- To simplify the replacement of worn cables, it is recommended to route the sheaths onto the cables and through the frame before removing the cables.

### INSTALLING THE DERAILLEUR HOUSINGS, BARREL ADJUSTERS AND CABLES



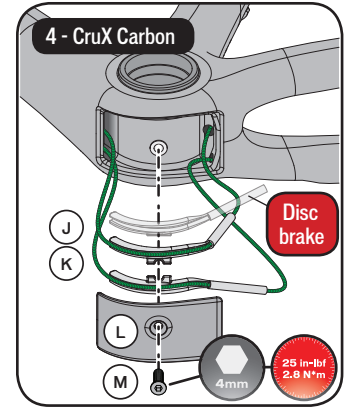
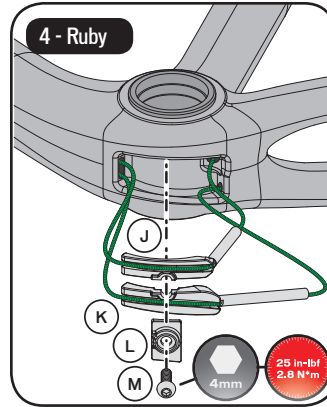
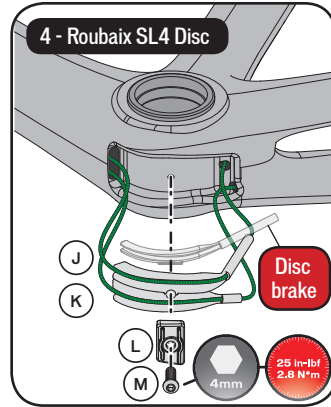
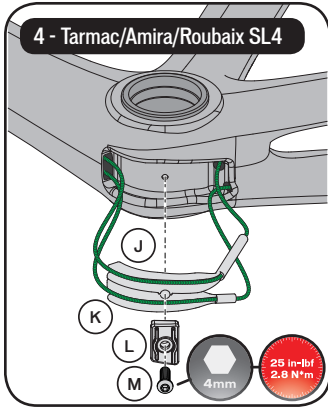
- **Fig. 1:** Decide to which side of the down tube each cable will be routed. The cables can go from the shifters to either side of the down tube. If the cable housings cross each other to the opposite sides of the down tube (California Cross), the cables will have to cross again inside the down tube (Fig. 3). More than a single cross inside the down tube will cause the cables to wind around each other and impede proper shifting.
- **Fig. 1:** Cut the cable housing to the required length so that the handlebars can rotate fully past 90° in each direction without pulling on the housings.
- **Fig. 2:** Cut out a section of housing (see inset) that equals the inner length of the barrel adjusters (approximately 1") at the desired location along the length of each shifter cable housing. Avoid placing the barrel adjusters too close to the shifters or the ICR stops.
- Remove the bottom bracket cable guide (if it's pre-installed). Leave the sheaths in the down tube; they are designed to ease installation of the cables.
- Install the cable (A) in the shifter as instructed in the shifter instruction guide (provided by the shifter manufacturer).
- **Fig. 2:** Install a housing ferrule (B) and the first part of cable housing (C), followed by the barrel adjuster (D) and the second piece of housing (E).
- **Fig. 2:** Install a housing ferrule (F) on the second piece of housing.
- **Fig. 2:** Install a plastic mini-sheath (G), then install a cable housing guide hat (H).
- **Fig. 3:** Run the cables (A) through the routing sheaths (I) until they exit the down tube at the bottom bracket. Once routed, remove the sheaths.

#### SPECIALIZED BICYCLE COMPONENTS

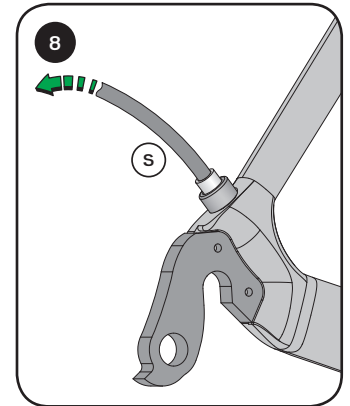
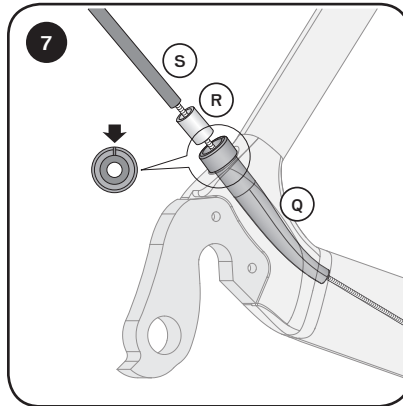
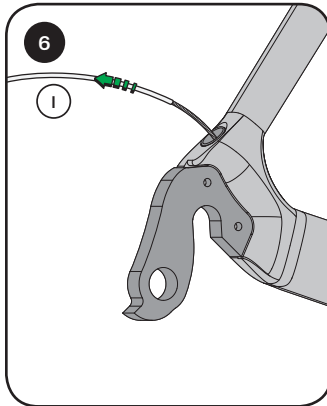
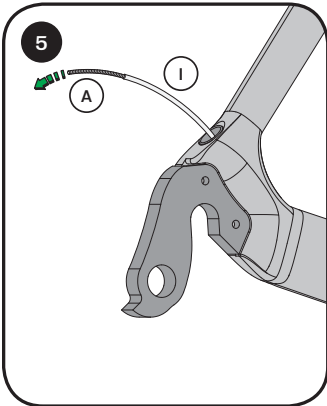
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IG0377 Rev.B, August 2012

Please note all instructions are subject to change for improvement without notice.  
Please visit [www.specialized.com](http://www.specialized.com) for periodic tech updates.  
Feedback: [techdocs@specialized.com](mailto:techdocs@specialized.com)

## ROUTING THE DERAILLEUR CABLES IN THE BOTTOM BRACKET CABLE GUIDE



- Install the front and rear derailleurs on the frame as instructed in the derailleur manufacturer's instruction guide.
- **Fig. 4:** Route the front derailleur cable coming out of the down tube hole through the non-drive-side portion of the bottom bracket cable guide (J), and up through the front derailleur cable guide hole. Make sure the cables are not crossing each other more than once inside the down tube (Fig. 1).
- **Fig. 4:** Route the rear derailleur cable coming out of the down tube through the drive-side portion of the bottom bracket cable guide (K), then through the chainstay routing sheath.
- **Fig. 4:** Place the cable guide bridge or cover (L) over the cable guides and install the bolt (M). Torque to 25 in-lbf (2.8 N\*m).



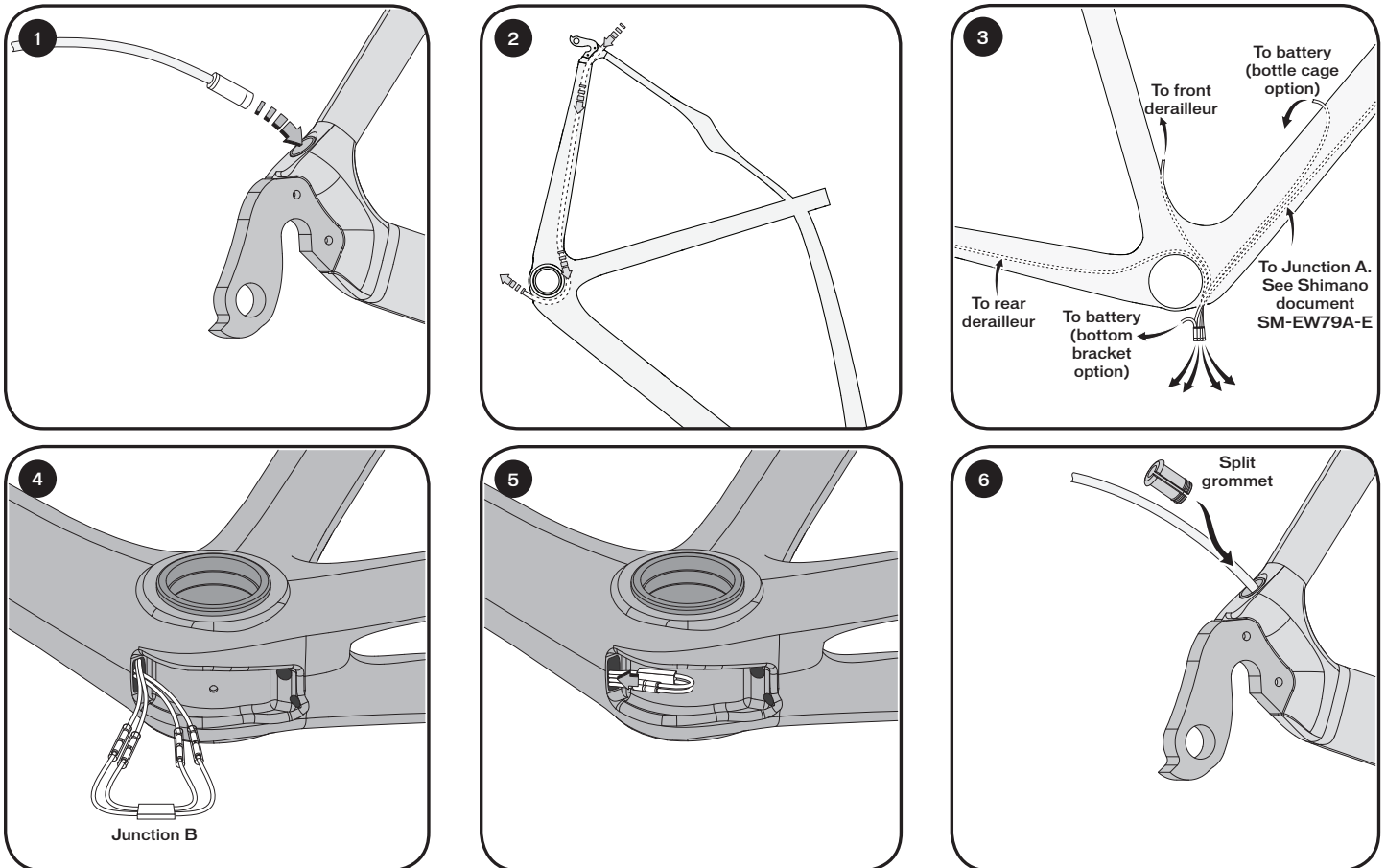
- Trim the rear derailleur cable housing to the required length for the rear derailleur to function properly.
- **Fig. 5, 6:** Once the cable comes out the drive-side dropout hole, remove the routing sheath.
- **Fig. 7:** Install the extended dropout guide (Q) (notch pointing up), followed by the cable ferrule (R) and cable housing (S).
- **Fig. 8:** Route the rear derailleur cable housing to the rear derailleur and insert the cable into the derailleur.
- Adjust the cable position for proper shifting and torque the cable bolt according to the manufacturer's torque specification.

# ELECTRONIC SHIFTING

## INSTALLING THE ELECTRONIC WIRING

Electronic shifting installation instructions are provided by the shifting system manufacturer. The following information covers steps that are specific to Specialized road frames, and are designed to be applied in conjunction with the manufacturer instructions

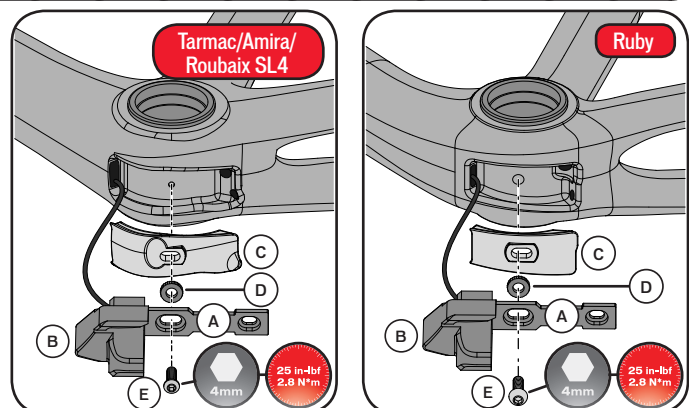
- **Fig. 1:** Route the rear derailleur wire through the dropout. All other wires should be routed as shown in the Shimano Di2 technical documents.
- **Fig. 2:** The rear derailleur wire must go over the top and around the front of the bottom bracket shell. To achieve this, it will be necessary to rotate the frame so that the chainstay is vertical and the front of the frame is pointed toward the ground.
- **Fig. 3:** Route each wire so that all wires exit the frame through the hole at the bottom of the down tube.
- **Fig. 4:** Connect each wire to its matching color-coded wire on Junction B, with a heat-shrink tube placed over each cable junction.
- **Fig. 5:** Once all the wires are connected to Junction B, re-insert the box and wires back through the down tube hole and into the frame.
- **Fig. 6:** Insert the split rubber grommet over the rear derailleur wire and insert it into the dropout hole. Repeat at the head tube/down tube hole.
- Follow the remaining steps in the Shimano Di2 technical documents.



## MOUNTING THE BATTERY AT THE BOTTOM BRACKET

Specialized offers different options for mounting the battery, by either using a water bottle bracket, or a bottom bracket mounted bracket. When running a bottom bracket mounted battery, tuck the wires and junction box back into the large bottom bracket hole, except the battery wire.

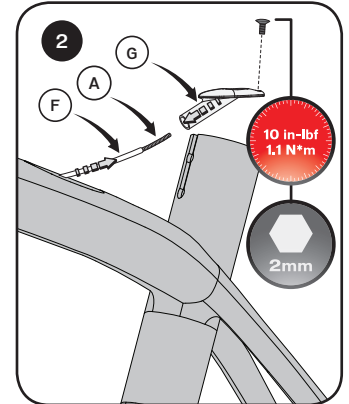
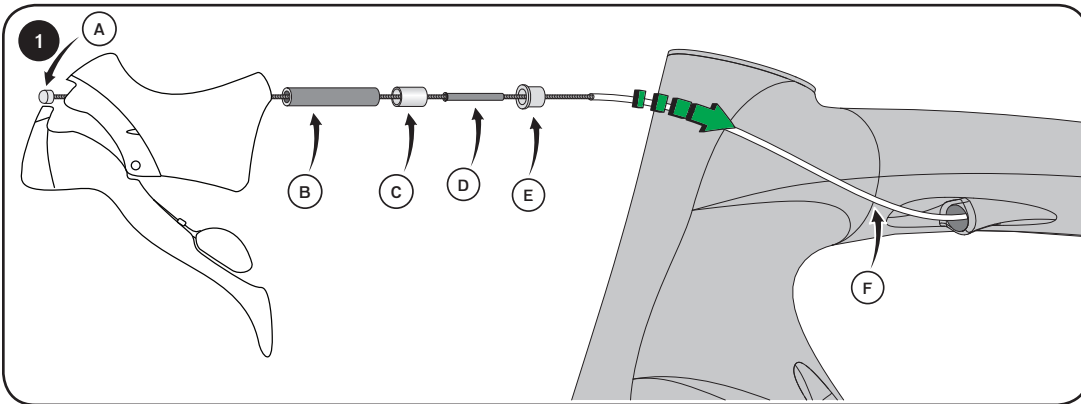
- Replace the Shimano battery bracket with the custom Specialized battery bracket (A).
- Connect the battery mounting assembly (B) to the junction box battery wire.
- Place the custom Specialized bottom bracket mounting bracket (C) that matches the frame into the bottom bracket cavity.
- Place the serrated washer between the battery bracket and the mounting bracket (D).
- Bolt the battery bracket to the frame (E).
- Finish tucking the battery wire up into the large bottom bracket hole.





# INSTALLING THE REAR BRAKE

## RIM BRAKES:

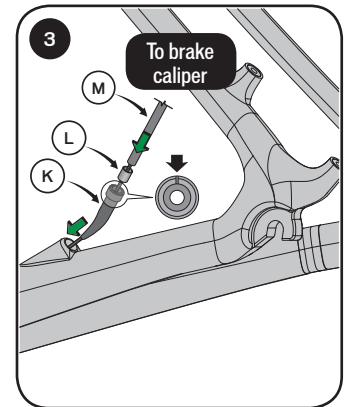
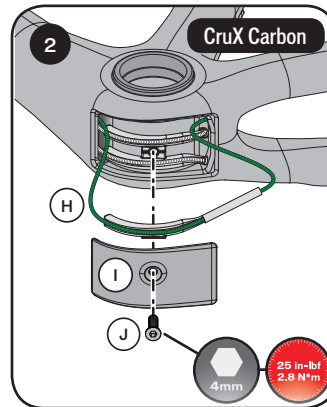
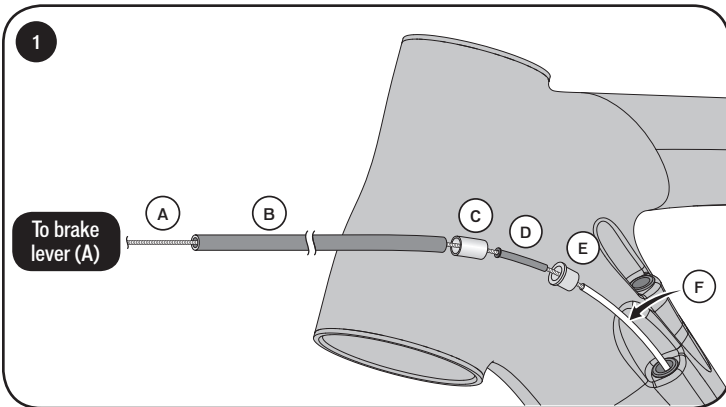


- Fig. 1: Install the brake cable (A), cable housing (B), brake cable housing ferrule (C), plastic mini-sheath (D) and cable housing guide hat (E).
- Fig. 1: Route the cable through the sheath (F) and through the brake ICR stop hole in the top tube, then remove the sheath.

**TECH TIP:** To prevent brake cable rattle, it is recommended to install three rubber donuts onto a piece of routing sheath (approximate length 8" [20cm]), then install the sheath with the three donuts onto the cable and through the ICR hole at the top tube/seat tube junction.

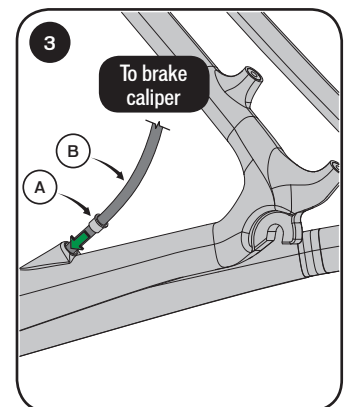
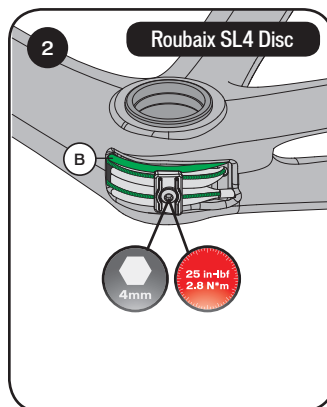
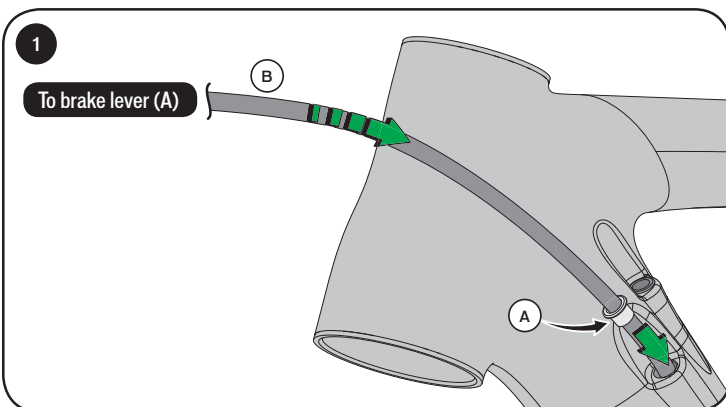
- Fig. 2: Install the brake ICR stop (G), then torque the stop in place (10 in-lbf (1.1 N\*m)).
- Trim the cable housing to the required length and install the housing. Fasten the cable as instructed in the brake manufacturer's instruction guide.

## DISC BRAKES WITH PARTIAL HOUSING (compatible CruX and Roubaix models only):



- Fig. 1: Install the brake cable (A), cable housing (B), housing ferrule (C), mini-sheath (D) and guide hat (E), then run the cable through the sheath (F).
- Fig. 2: Remove the sheath, then route the cable through the bottom bracket brake cable guide (H). Install the guide door or bridge (I) and bolt (J). Install the cable into the chainstay sheath. Once the cable exits through the brake ICR stop hole in the chainstay, remove the sheath.
- Fig. 3: Install the cable noodle (K), followed by a housing ferrule (L). Trim a section of brake cable housing (M) to the required length and install the housing. Install the housing on the cable, then fasten the cable to the brake caliper as instructed in the brake manufacturer's instruction guide.

## DISC BRAKES WITH FULL HOUSING (compatible CruX and Roubaix models only):



- Fig. 1: Place a guide hat (A) on the housing (B), then route the housing into the down tube ICR guide hole.
- Fig. 2: Route the housing through the bottom bracket cable guide holes. Do not use the supplied cable guide.
- Fig. 3: Continue installing the housing into the non-drive-side chainstay. Once the housing exits through the brake ICR stop hole in the chainstay, install a guide hat (A) on the housing (B).
- Trim the housing to the desired length, then connect the housing to the caliper as instructed in the brake manufacturer's instruction guide.