9. REAR TRIANGLE PIVOT ASSEMBLY

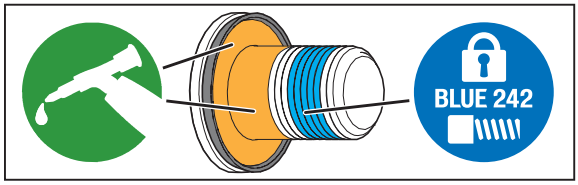
In order to successfully build the LEVO FSR rear triangle, it is very important to follow the order of operations as outlined in this manual. Modifying the order of assembly will result in a longer build process.

Grease all bearing surfaces before placing the spacers against the bearings. This helps keep the spacers in place when assembling each pivot. Always place the smaller (tapered) surface against the bearing, and the wider surface against the frame or stay.

PIVOT BOLTS: All pivot bolts are factory treated with a one-time use Loctite Dryloc thread coating. If the bolts are removed for maintenance, either clean and apply a new coat of Loctite blue 242 threadlocker, or install new bolts.

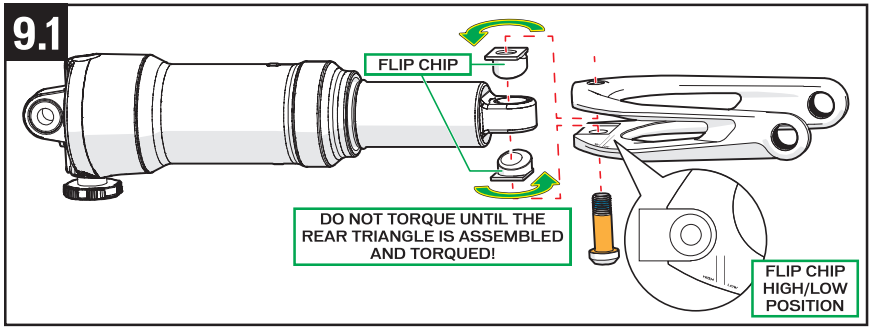
Only apply grease to the unthreaded portion of the bolt shaft and the inner bolt head surface (orange highlighted portion of bolts as shown in illustrations below). Do NOT grease the threads.

For best alignment results, do not torque any of the rear triangle pivot and shock bolts until the rear triangle is fully assembled to the front triangle.



With all the bearings installed in the chainstay, seatstay and link, follow the specific order as listed below:

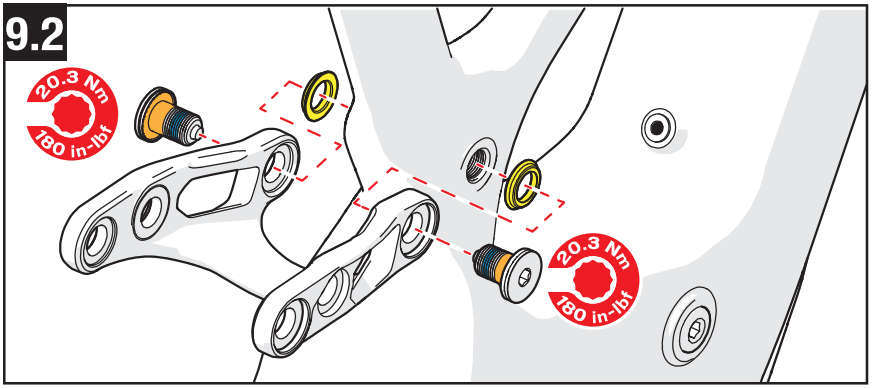
EXTENSION @ SHOCK



- Fig. 9.1: Place the Flip Chip eccentric sleeves inside the lower shock eye, in the High or Low mounting position.
- Fig. 9.1: Align the shock eye with the extension hole, then install the bolt/nut.

Do not torque the lower shock eye bolt until the last step!

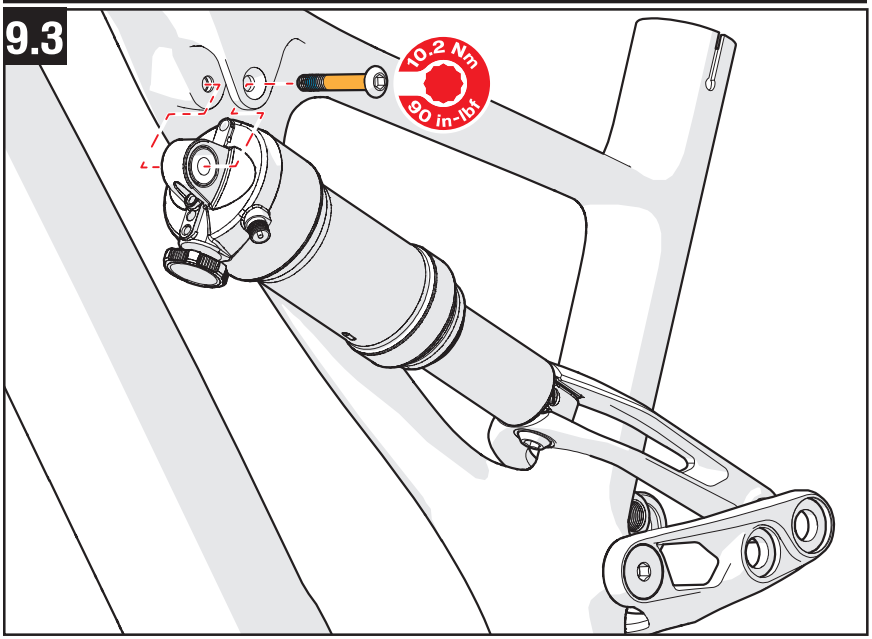
LINK @ SEAT TUBE



- **Fig. 9.2:** Grease, then place the spacers against the inner surface of the link @ seat tube bearings (tapered surface against the bearing).
- **Fig. 9.2:** Align the link with the seat tube pivot, then insert the pivot bolts.

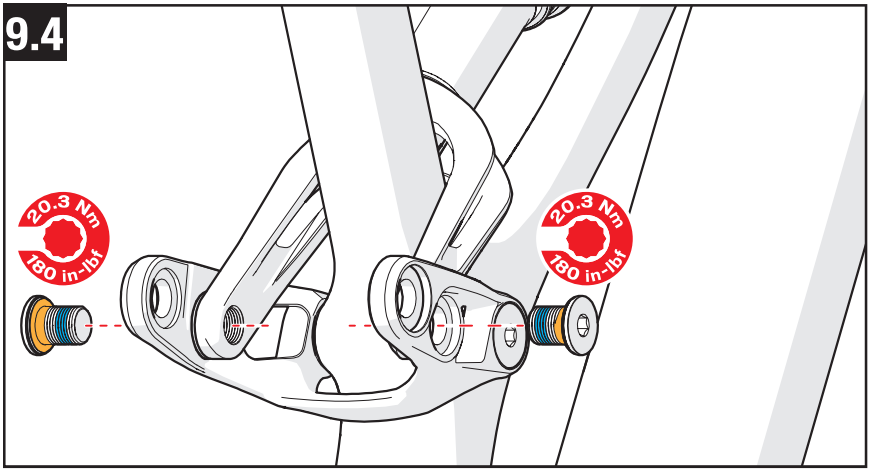
Place a small rag between the link and seat tube to prevent any damage to the seat tube.

SHOCK @ UPPER SHOCK EYE MOUNT



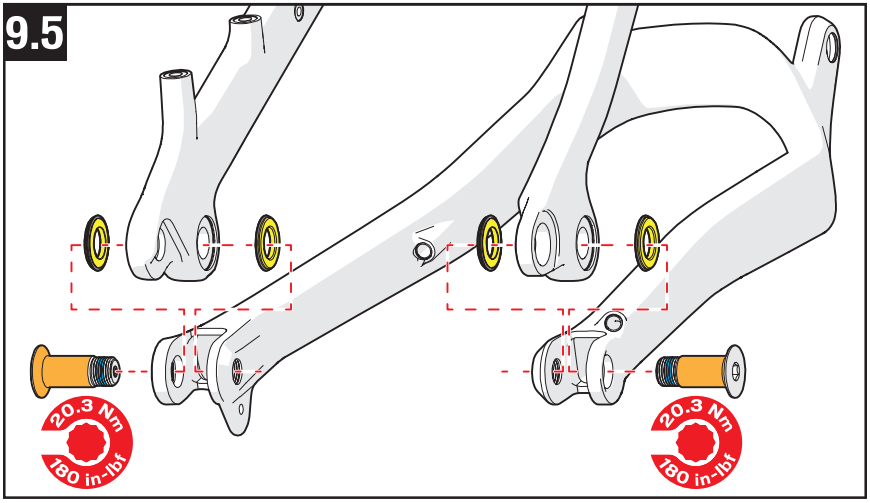
- **Fig. 9.3:** Place the extension around the seat tube, then align the upper shock eye with the frame mount.
- **Fig. 9.3:** Insert the upper shock eye bolt.

EXTENSION @ LINK



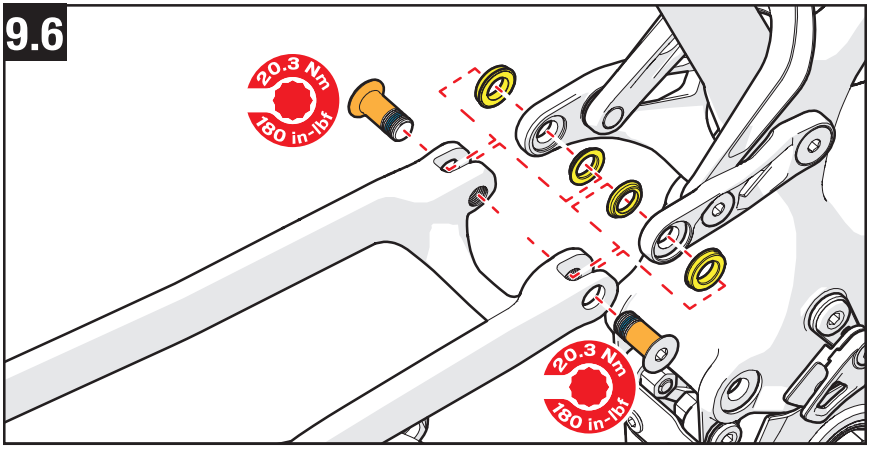
- **Fig. 9.4:** Align the extension with the bearings, then insert the pivot bolts.

HORST LINK (DROPOUT)



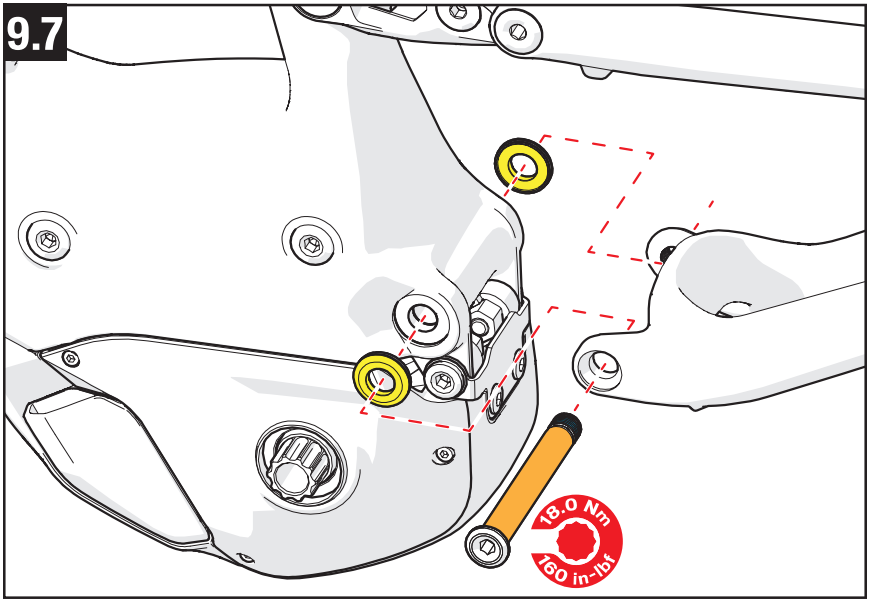
- **Fig. 9.5:** Grease, then place all the outer Horst spacers against the Horst bearings (tapered surface against the bearing).
- **Fig. 9.5:** Align the drive-side and non-drive side Horst pivot assemblies, then insert the pivot bolts.

SEATSTAY @ LINK



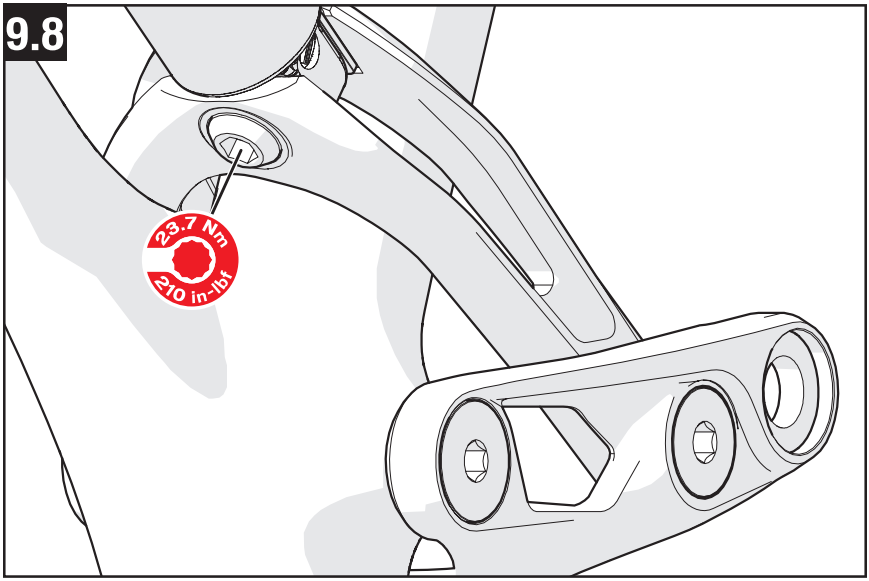
- **Fig. 9.6:** Grease, then place the two outer spacers (with seals against the bearing) and two inner spacers (conical, tapered surface against the bearing) against the link bearings.
- **Fig. 9.6:** Align the seatstay tabs with the link pivot bearings and spacers, then insert the pivot bolts.

MAIN (BOTTOM BRACKET)



- **Fig. 9.7:** Grease, then place the main pivot spacers against the main pivot bearings (seal against the bearing).
- **Fig. 9.7:** Align the chainstay tabs with the main pivot bearings and spacers, then insert the axle.

LOWER SHOCK EYE BOLT



- **Fig. 9.8:** Once all pivot locations are assembled and torqued to specification, torque the lower shock eye bolt.

For easy lower shock eye bolt access, use the Carbon Crank 6mm Allen w/Socket, part #9891-3010.

FLIP CHIP

All models are assembled with the Flip Chip in the Low position. Switching to the High position raises the bottom bracket height by approximately 5-6mm and steepens the head tube angle by approximately 0.5 degrees.

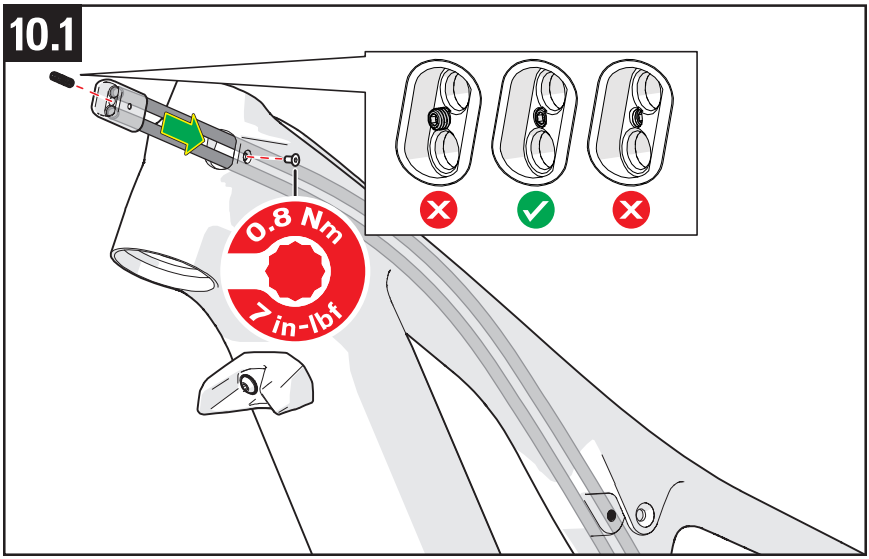
Place a rag between the link and the seat tube to make sure the link doesn't make contact with the seat tube.

- Remove the upper shock eye bolt and the two extension bolts, then remove the extension/shock assembly from the bike.
- Remove the lower shock eye bolt, then remove the Flip Chip halves out of the lower shock eye.
- Rotate the Flip Chip halves 180 degrees then push them back into the lower shock eye.
- Assemble the rear shock eye to the extension and install the bolt (do not torque at this time).
- Install then torque to specification the upper shock eye bolt and the two extension bolts.
- Torque the lower shock eye bolt to specification.

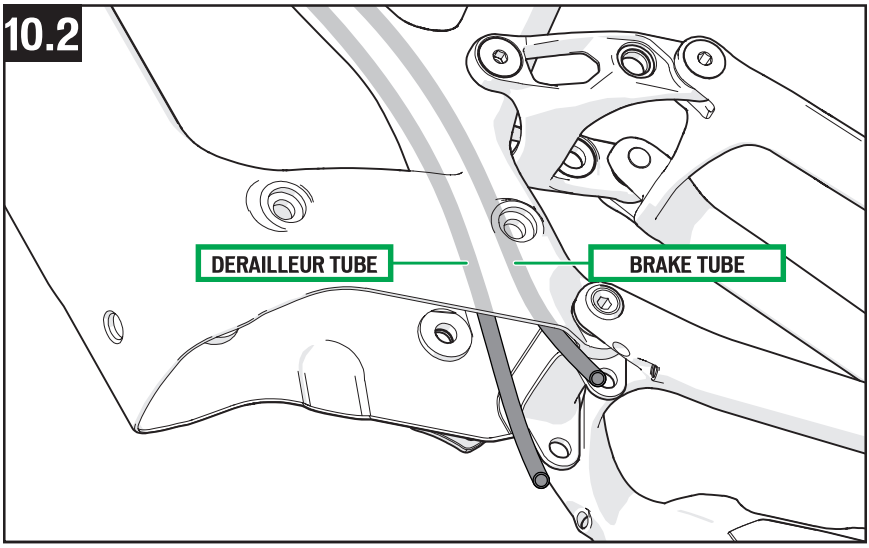
10. INTERNAL CABLE ROUTING

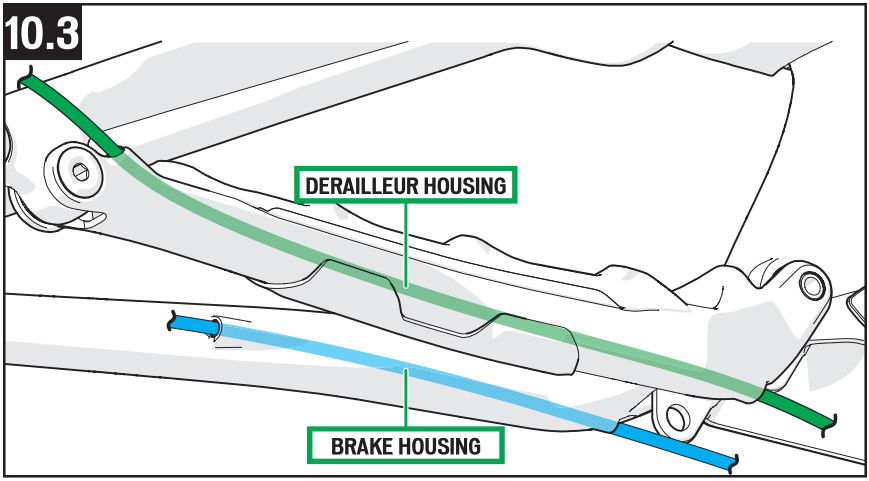
10.1. CARBON FRAME

- Remove the upper shock eye bolt and compress the suspension. Wrap the seat tube with some protective material to prevent the link from hitting the seat tube.

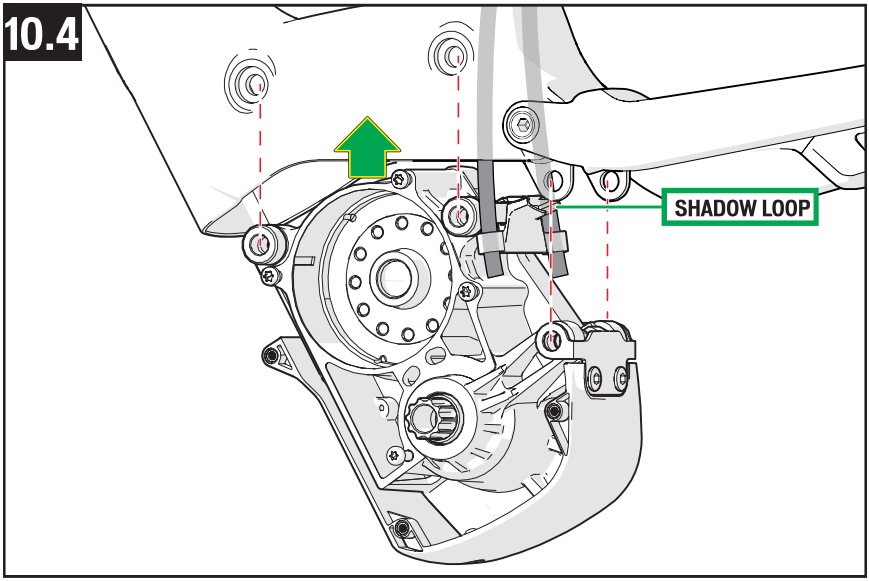


- **Fig. 10.1:** Install the tubes in the head tube exit port. The softer nylon tube goes in the upper hole for the brake housing, and the harder nylon tube goes in the lower hole for the shift housing.
- **Fig. 10.1:** Install the set screw.
- **Fig. 10.1:** Insert the nylon tubes through the head tube ICR entry port, through the top tube, down the side arm and out the motor cavity (**Fig. 10.2**).
- **Fig. 10.1:** Seat the exit port in the head tube cavity, then install the exit port screw and torque to 7 in-lbf / 0.8 Nm.

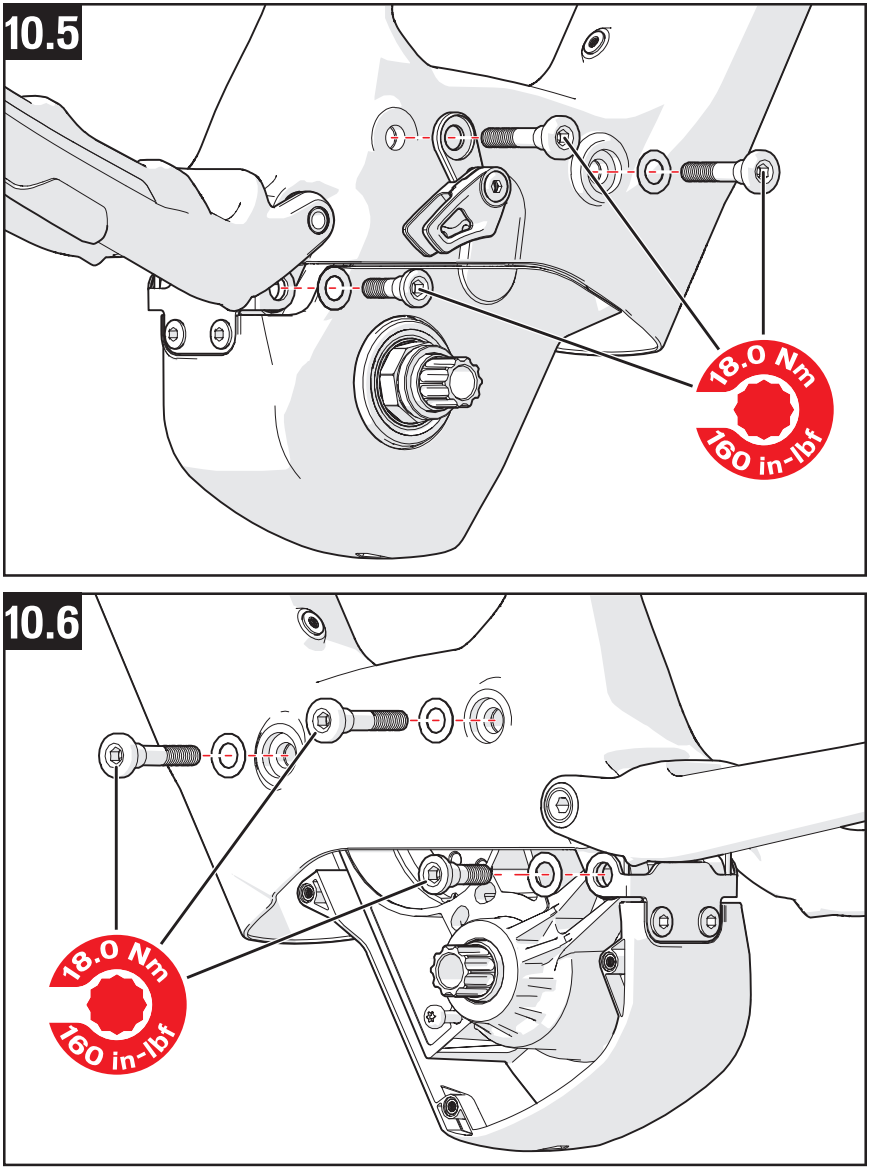




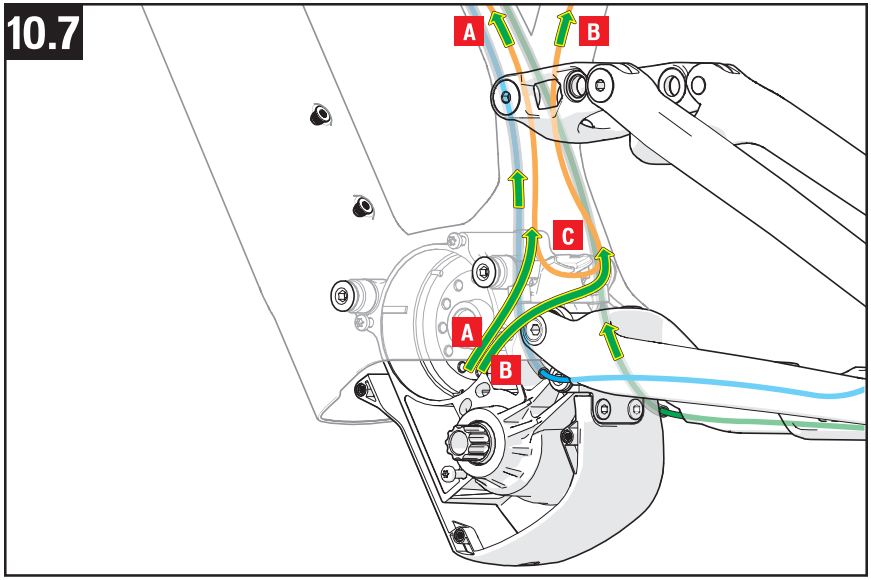
■ **Fig. 10.3:** Run the brake and shift housings into the respective chainstay ports near the rear dropout, then out the chainstay ports near the bottom bracket pivot area.



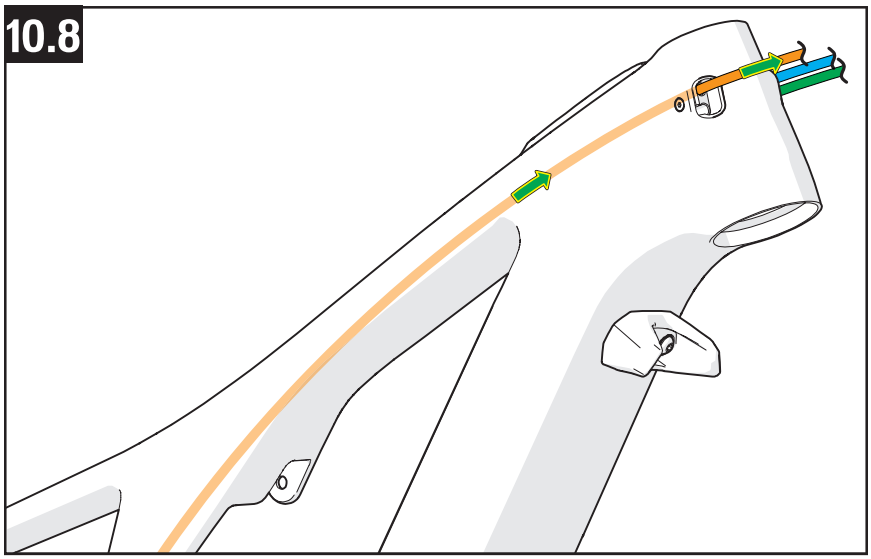
■ **Fig. 10.4:** Install the motor in the frame, then insert the nylon tubes into the Shadow Loop guides to hold them in place.



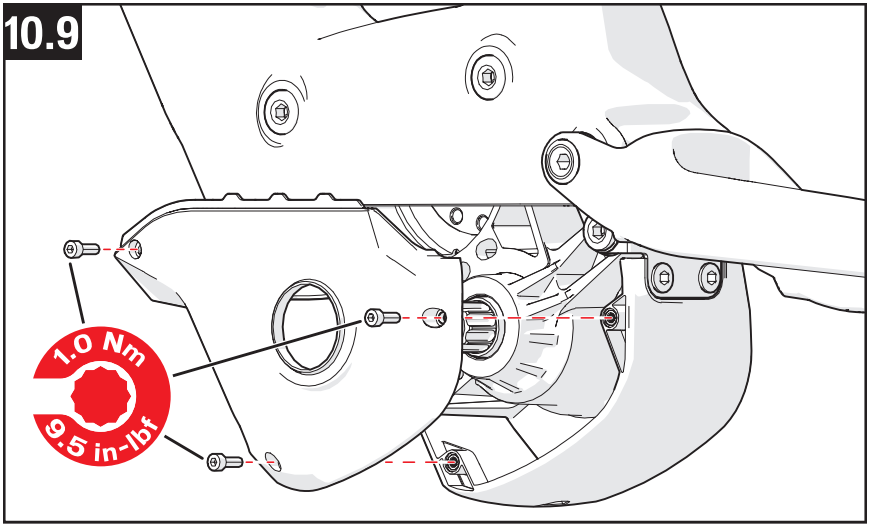
■ **Fig. 10.5 & 6:** Torque the motor mount bolts to 160 in-lbf / 18 Nm.



- **Fig. 10.7:** Insert one end of the dropper post housing between the motor and the frame, on the non-drive side of the Shadow Loop, then guide the housing up the side-arm, top tube, and out the head tube area (A).
- **Fig. 10.7:** Insert the other end of the dropper post housing between the motor and the frame, on the drive side of the Shadow Loop, then guide the housing up the seat tube until it exits the top of the seat tube (B).
- **Fig. 10.7:** Make sure the housing is positioned underneath the Shadow Loop protrusion (C), then grab both ends of the housing and push/pull in both directions to ensure the housing can move freely.
- **Fig. 10.7:** Guide the brake and shift housings into the nylon tubes until they exit the head tube exit port (**Fig. 10.8**).



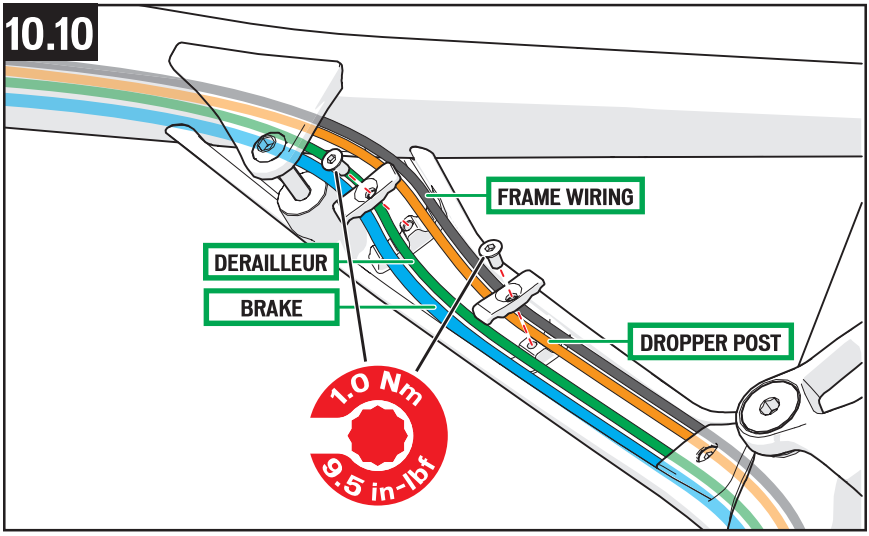
- **Fig. 10.8:** Guide the dropper post housing out the upper drive side exit port hole.



- **Fig. 10.9:** Install the non-drive side motor cover. Torque the bolts to 9.5 in-lbf / 1.0 Nm.
- Install the dropper post, shift and brake systems according to the manufacturer's instructions.
- Reinstall the rear shock (Forward shock eye: 90 in-lbf / 10.2 Nm, Extension @ Link: 180 in-lbf / 20.3 Nm).

10.2. ALLOY FRAME

- Follow the same steps as for the carbon frame. The two frames differ only in how the housings are routed through the head tube ICR port and the side-arm. The different steps are listed below.



- **Fig. 10.10:** Insert the side-arm housing guide with nylon tubes into the side-arm, until the nylon tubes exit at the motor cavity.
- Install the shift, brake and dropper post housings into the head tube ICR port, guide them out the exit port above the forward shock mount, then guide the housings into the holes in the side-arm guide.
- Install the two cable bats into the side-arm to hold the housings in place. Torque to 9.5 in-lbf / 1.0 Nm.

11. AIR SHOCK SETUP

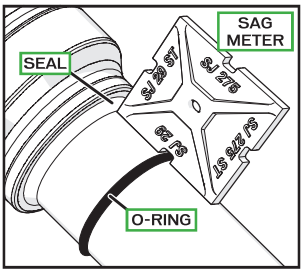
When setting suspension, always set the shock first and fork second for air pressure, rebound, then compression.

Make sure you're wearing all gear that would normally be worn on a ride (shoes, helmet, hydration pack if used, etc.).

Sag is measured as the distance between the o-ring and the shock body's seal, after the rider's weight has been applied to the bike, with no bounce. When the pressure is correctly set, sag should measure approximately 25-30% of stroke, depending on rider experience/preference and terrain conditions. If the rider is approaching 300lbs, sag may exceed the bike's prescribed amount.

11.1. SETTING AIR PRESSURE

1. Set the shock compression lever or knob (blue) to the full open or off position, and set the rebound knob to the middle of the click range.
2. Attach a high-pressure shock pump to the air valve and increase the air pressure.
3. Push the o-ring against the seal, then mount the bicycle while propped up against a wall and sit in the saddle in a normal riding position, without bouncing the suspension. Do not set sag while riding!
4. Check the sag by placing the Sag Meter against the rear shock shaft. Once the sag is close to the desired setting, increase or decrease the pressure as needed in 5psi increments until the desired sag is achieved.



To equalize the air pressure, cycle the shock or fork anytime after the air pressure has been adjusted.

CAUTION: Do not exceed the shock manufacturer's maximum air pressure (FOX: 350psi, ROCKSHOX: 325psi).

Please visit the suspension setup tool at www.specialized.com for personalized recommendations for a baseline suspension setup based upon your specific height and weight.

11.2. ADJUSTING REBOUND

Rebound damping (red knob) controls the rate at which the shock returns after it has been compressed. Each rear shock has a range of rebound clicks to fine-tune the rebound return rate.

- Adjust the rebound based on the range provided in the suspension setup tool for your bike setup and rider weight, as well as other factors like rider experience/preference and terrain conditions, then fine-tune during the ride if necessary. If you do not have access to the suspension setup tool, start in the middle of the click range.
- Clockwise for slower rebound (heavier riders, slow speed, bigger hits).
- Counter-clockwise for faster rebound (lighter riders, higher speeds, small bumps, more traction).

It is best not to veer too far from the recommended clicks, since being too far out of the accepted range can negatively impact the ride experience.

11.3. ADJUSTING COMPRESSION

Compression damping (blue knob) controls the amount of support of the shock platform. In other words, the shock's ability to resist low-speed pedaling forces while still being able to absorb high-speed compression forces.

Please refer to the suspension manual for specifics about the compression options provided by your suspension. Typically, a suspension is equipped with some or all of the following settings:

- **OPEN:** Low-speed compression setting optimized for the perfect balance of control and plushness for steep, aggressive descents.
- **PEDAL:** Moderate low-speed compression setting is activated for an optimal blend of pedaling efficiency and bike control on variable terrain.
- **LOCK:** The firmest low-speed compression setting is activated for maximum pedaling efficiency.

12. SHOCK SETUP DATA

DATE						
RIDER WEIGHT						
FORK PSI						
FORK REBOUND (# of clicks from full slow)						
FORK COMPRESSION (# of clicks from full firm)						
SHOCK PSI						
SHOCK REBOUND (# of clicks from full slow)						
SHOCK COMPRESSION (# of clicks from full firm)						

13. SPECIFICATIONS

13.1. GENERAL SPECIFICATIONS

ITEM	PART #	SPECIFICATION
HEADSET	S182500005	1 1/8" UPPER / 1.5" LOWER DROP-IN BEARINGS
SEAT COLLAR DIAMETER	S184700004	38.6mm
SEATPOST DIAMETER		34.9mm
DERAILLEUR HANGER	S172600001	HGR MY18 MTB THRU AXLE DER HANGER
REAR HUB SPACING	S170200003	AXL MY17 EPIC HT THRU-AXLE 148mm X 12mm

The specs below are the stock configurations for each model.

MODEL	WHEEL / TIRE	SHOCK TRAVEL	SHOCK EXTENSION [1]	SHOCK STROKE	FORK TRAVEL	BB HEIGHT [1]	HEAD TUBE ANGLE [1]
LEVO	29 x 2.6	150	**95** / 98	210 x 52.5	150	**342** / 347	**65.5** / 66

[1] The shock extension length, bottom bracket (BB) height and head tube angle all have two settings based on the Flip Chip position. The stock configuration for the Flip Chip is in the lower position (highlighted in **BOLD**). Refer to section 9 on page 22 for information about adjusting the Flip Chip.

13.2. FRAME/BIKE CUSTOMIZATION:

Levo FSR frames are available in a 29" configuration, with different wheel/tire and/or fork options. Each of these variables will affect the bottom bracket height and head angle of the frame, as well as the general ride characteristics of the bike. If you decide to make changes to the stock configuration, e.g. changing the tire size or fork travel, please check with your Authorized Specialized Retailer what components, if any, need to change for compatibility.

WARNING! Changing the frame configuration can alter the BB height and/or the head tube angle, which can have negative effects on the bike's handling characteristics and ride quality. In certain cases, it can also result in frame/shock incompatibility. Please refer to your Authorized Specialized Retailer before making any modifications to the wheel/tire size, shock, shock extension and/or fork length.

MAXIMUM FORK LENGTH AND TIRE SIZE:

WHEEL SIZE	MAX FORK TRAVEL	MAX REAR TIRE SIZE	CHAINRING SIZE
29"	160mm	27.5 x 3.0 or 29 x 2.6	32 - 34t [2]

WARNING! Specialized frames are compatible **ONLY** with forks that have a specific range of travel (see table). Use of different styled forks or forks with longer travel may result in catastrophic failure of the frame which may result in serious personal injury or death.

[2] With the chainguide removed, a 36t chainring can be used.

WARNING! While the 29 frame is generally compatible with tires up to 27.5 x 3.0 or 29 x 2.6, tire dimensions can vary depending on the manufacturer, and not all forks are designed to accept a larger tire. Always check with the fork manufacturer regarding required clearances.

13.3. BOLT SIZE / TOOLS / TORQUE SPECIFICATIONS

WARNING! Correct tightening force on fasteners (nuts, bolts, screws) on your bicycle is important for your safety. If too little force is applied, the fastener may not hold securely. If too much force is applied, the fastener can strip threads, stretch, deform or break. Either way, incorrect tightening force can result in component failure, which can cause you to lose control and fall.

Where indicated, ensure that each bolt is torqued to specification. After your first ride, and consistently thereafter, recheck the tightness of each bolt to ensure secure attachment of the components. The following is a summary of torque specifications in this manual:

GENERAL TORQUE SPECS:

LOCATION	TOOL	TORQUE (in-lbf)	TORQUE (Nm)
SEAT COLLAR	4mm HEX	45 [3]	5.1 [3]
STEM @ STEERER TUBE	4mm HEX	45	5.1
STEM @ HANDLEBAR	4mm HEX	45	5.1
CRANK BOLTS	8mm HEX	354	40
CHAINRING BOLTS	5mm HEX	89 [4]	10 [4]
SPIDER LOCKRING	Shimano BB-UN 98 / Park Tool BBT-18	443	50
REAR BRAKE GUIDE	2.5mm HEX	7	0.8
WATER BOTTLE BOSS	3mm HEX	25	2.8
12MM REAR AXLE	6mm HEX	133	15.0
DERAILLEUR HANGER	2.5mm HEX	7	0.8
CHAINSTAY PROTECTOR	T25 TORX	7	0.8
CARBON FRAME - HEAD TUBE EXIT PORT (mounting screw)	2mm HEX	7	0.8
CARBON FRAME - HEAD TUBE EXIT PORT (set screw)	1.5mm HEX	N/A	N/A
ALLOY FRAME - SIDE-ARM CABLE BATS	3mm HEX	9.5	1.0
ALLOY FRAME - HEAD TUBE HOUSING PORT	3mm HEX	9.5	1.0
BATTERY MOUNT	6mm HEX	55	6.2
DOWN TUBE BUMP STOP	T25 TORX	55	6.2
TCU DISPLAY	T10 TORX	7	0.8
MOTOR MOUNTS	6mm HEX	160	18
MOTOR COVER	3mm HEX	9.5	1.0
CHAINSTAY MOUNTED SENSOR	2.5mm HEX	18	2.0
SPEED SENSOR MAGNET	T25 TORX	55	6.2
HANDLEBAR REMOTE	2mm HEX	7	0.8

[3] The seat collar torque spec can vary depending on the seatpost or seatpost/shim combination. Certain dropper seatposts can be very sensitive to torque. Too low torque can cause seatpost slip, too high torque can cause the mechanism to bind as the saddle is raised or lowered. The seat collar baseline torque spec is 45 in-lbf / 5.1 Nm, but can be raised or lowered slightly (35-55 in-lbf / 4.0-6.2 Nm) as required by the seatpost. Follow the seatpost's recommended applied torque if available, and do not exceed 55 in-lbf / 6.2 Nm.

[4] Apply blue loctite to chainring bolts.

CAUTION (non-pivot bolts): Ensure all contact surfaces are clean and greased.

PIVOT TORQUE SPECS (Torque the pivot bolts in the order listed below, after the assembly is complete):

LOCATION	ALLEN KEY	TORQUE (in-lbf)	TORQUE (Nm)
MAIN (BOTTOM BRACKET) [4]	6	160	18
LINK @ SEAT TUBE	6	180	20.3
LINK @ SEATSTAY	6	180	20.3
DROPOUT (HORST LINK)	6	180	20.3
LINK @ EXTENSION	6	180	20.3
UPPER SHOCK EYE	5	90	10.2
LOWER SHOCK EYE	6	210	23.7

13.4. TOOLS REQUIRED

■ 1.5, 2, 2.5, 3, 4, 5, 6, 8mm Hex keys	■ High pressure shock pump	■ Cable and housing cutters
■ T10, T25 Torx keys	■ High-quality grease	■ Cutting blade (for Nylon tubes)
■ Torque wrench	■ Blue threadlocker (Loctite 242)	■ Protective strip (tube cutting)

13.5. RECOMMENDED TIRE PRESSURES

Proper tire pressure is critical for optimal performance. Tires with higher pressure will typically roll faster and provide less rolling resistance, but provide less traction. Tires with lower pressure will typically provide increased traction and control at the expense of rolling resistance. Too little pressure will increase the risk of rim damage and potential for "burped" tires (releasing air when used as tubeless).

Experiment with different tire pressures in different conditions to find what works best for you when riding your preferred terrain.

Use a quality pressure gauge and refer to the tire pressure recommendations written on the side of the tires.

Because of the extra weight of the LEVO bicycle, tire pressure should generally be higher compared to a regular bicycle, such as a Stumpjumper FSR.