



COMPULSION TECHNICAL MANUAL

FELT
BICYCLES / CALIFORNIA





INTRODUCTION

COMPULSION

Congratulations on purchasing a Felt Compulsion. As with all of our bikes and components, our aim is to provide the rider with the best product and riding experience. Read this manual supplement thoroughly, as it's to help you set your bike up correctly, and care for it.

For further information, visit:

FELTBICYCLES.COM

STATS

- Rear Wheel Travel: 165mm.
- Fork: Designed around 170mm fork, compatible with forks up to 180mm.
- Tire size: 27.5x2.6 max (*with proper ISO clearance*).
- Bottom Bracket: English Threaded (AKA 'BSA' Standard), 73mm wide.
- Headset: Zero Stack 1 1/8-1.5 tapered. FSA calls this 'no. 57'. Cane Creek calls this ZS44/28.6 Upper, ZS56/40 Lower.
- Seatpost: 30.9mm diameter. Compatible with internally-routed dropper posts only.
- Seatpost collar: 34.9mm diameter.
- Rear Axle: 148x12, Syntace standard (12x1.0 thread).
- Rear Shock: 205x65mm Metric standard. Trunnion top, Ø8x30mm reducers bottom.
- Chainring: 52mm (Boost) chainline. Maximum 38t round, or 36t oval.
- Di2 Compatible: Yes
- Rear Brake: 160mm direct Post Mount.
- 1x drivetrain ONLY.

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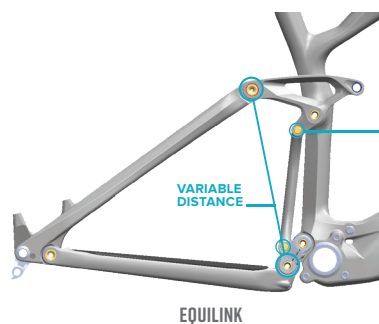




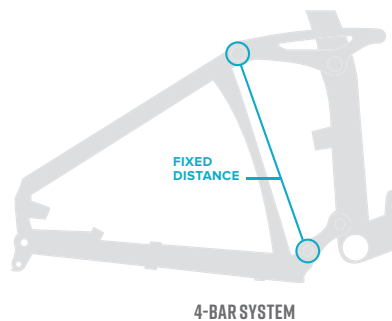
EQUILINK EXPLAINED

Equilink is a patented 6-bar linkage system that allows our engineers to deliver a unique ride quality with no compromises. Typical short-link 4-bar systems can be optimized for bump absorption or efficient pedaling, but not both. The suspension's bump performance is dictated by the leverage curve (how much the shock compresses relative to the rear wheel travel), which is governed by the rotation of the upper link. The pedaling efficiency is determined by the anti-squat curve, which is related to the motion of the lower link. When the upper and lower links are connected through a 1-piece rear triangle (like the image below on the right), any changes the designer makes to the upper link to optimize the leverage curve will change the rotation of the lower link, affecting the anti-squat curve. Likewise, any changes to the lower link to optimize anti-squat will compromise the leverage curve.

The solution? Connect the upper and lower links with the 'equilink.' This allows our engineers to tune the rotation of the upper and lower links independently, to optimize both leverage and anti-squat curves. The result is a leverage curve that's progressive, providing small bump sensitivity, mid stroke support, and bottom-out resistance; and an anti-squat curve that provides the appropriate amount of pedaling support in the beginning of suspension travel (where pedaling occurs), while limiting pedal kickback on big compressions, keeping things active.



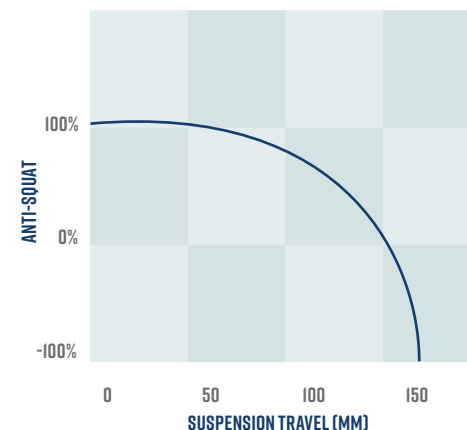
DURING THE DESIGN PROCESS, OUR ENGINEERS CAN MOVE THE EQUILINK MOUNTING POINTS TO BEST CONTROL THE ROTATION OF THE UPPER AND LOWER LINKS.



EQUILINK EXPLAINED CONT.

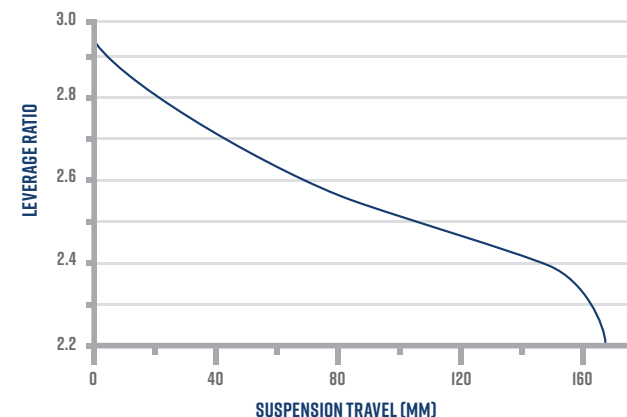
EFFICIENT PEDALING //

To accomplish efficient pedaling, the suspension is designed with an ideal amount of anti-squat. A key benefit of the Equilink is that it allows for a downward sloping anti-squat curve which falls off more rapidly around 60% travel. This translates to a bike that pedals well and is able to absorb bumps at the same time.



LARGE IMPACTS // To provide support on large impacts, the bike has a progressive leverage ratio. This means that the suspension gets progressively harder to compress as it moves through its travel.

LEVERAGE RATIO

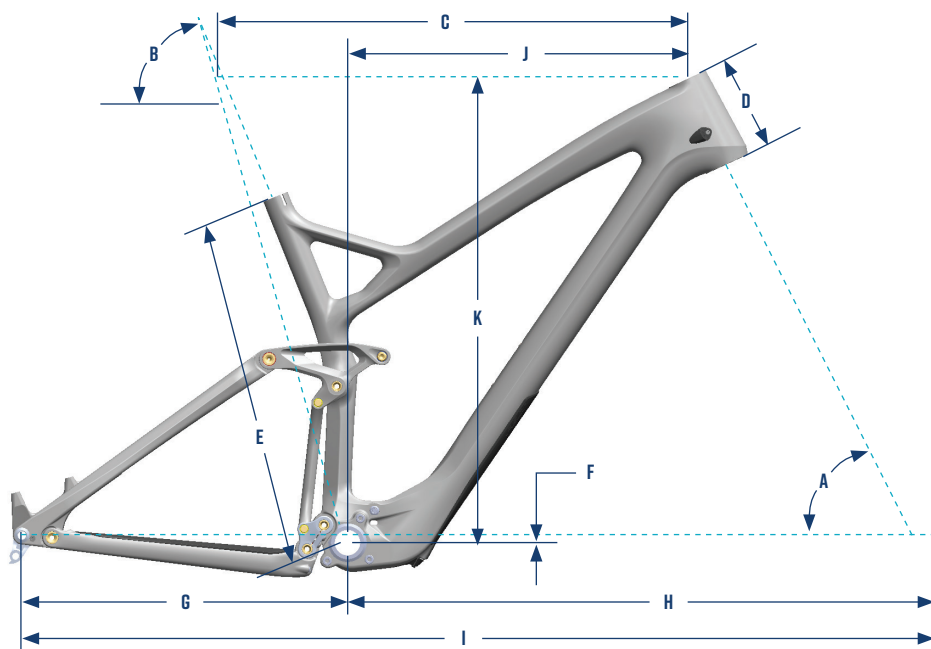


SMALL-BUMP SENSITIVITY // For small-bump sensitivity, the shock is tuned with very little compression damping. Because the linkage is providing the pedaling efficiency and large impact support, the shock can remain active and absorb bumps when needed. The added benefit of doing this is the shock is not compensating for any shortcomings of the linkage design, therefore it is not working as hard which leads to less heat buildup and more consistent performance.





GEOMETRY



	SIZE	SMALL 16"	MEDIUM 18"	LARGE 20"	EXTRA LARGE 22"
A	HA	65	65	65	65
B	SA	74.4	74.4	74.4	74.4
C	TT HORIZ	568	597	627	654
D	HT LENGTH	90	105	125	150
E	SEAT TUBE C-T	405	435	470	505
F	BB DROP	10	10	10	10
G	CS	433	433	433	433
H	FRONT CENTER	723	754	788	819
I	WHEELBASE	1154	1187	1221	1252
-	STANDOVER	708	722	735	750
J	REACH	405	430	455	475
K	STACK	583	597	615	638

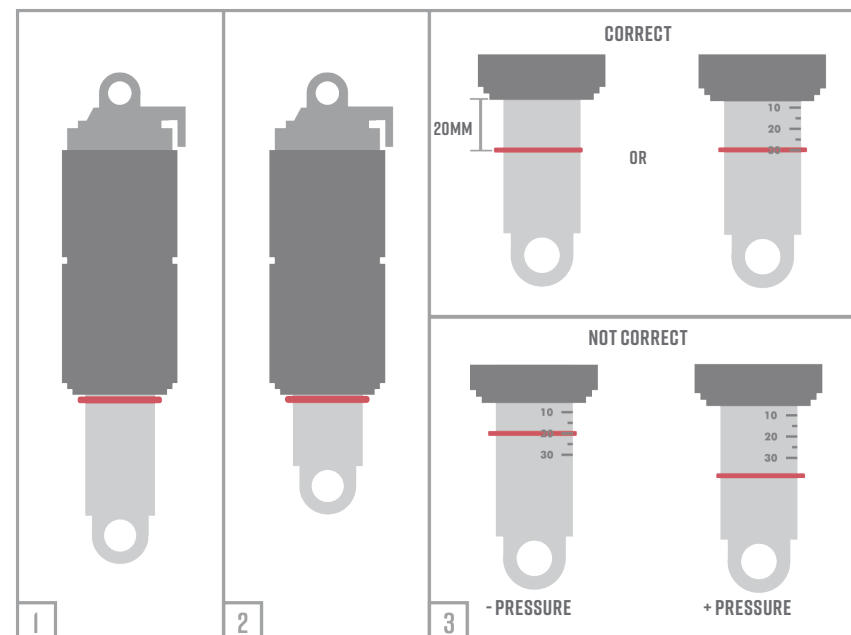
GEOMETRY IN MIDDLE CHIP POSITION

SHOCK SETUP

It is very important to have the correct amount of sag so that the suspension can be in the part of its travel that is most efficient and compliant. Felt recommends starting at 30% and adding/subtracting up to 5-10% to fine tune to your personal preference.

TO MEASURE SAG, FOLLOW THESE 4 STEPS:

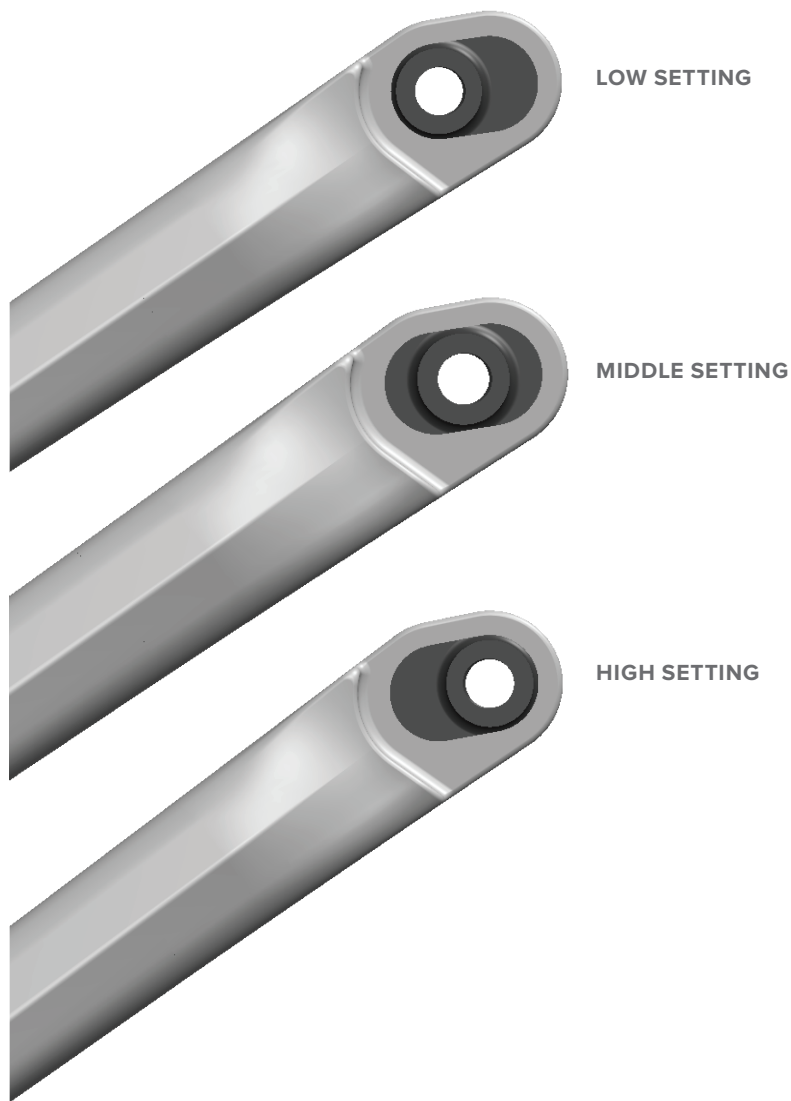
1. Push the o-ring to the top of the shock shaft.
2. Sit on the bike with the seat at full ride height to compress the shock. Bounce a few times, then push the o-ring back to the top of the shaft.
3. Gently get off the bike, taking care not to change the position of the o-ring. On some shock models, the sag gradients will be printed on the shaft. In this case, simply read your sag percentage as it is printed on the shock shaft. If there are no sag gradients, measure the distance of the o-ring from the top of the shaft. To achieve 30% sag, the o-ring should be 20mm from the top of the shaft. If there is too much sag (>30%) add air pressure, if there is not enough sag (<30%), reduce air pressure.
4. Repeat process until desired sag is achieved.





FLIP CHIPS

The Compulsion comes with two sets of pivot hardware for the Seatstay Yoke Pivot to allow you to change the geometry of the bike. One set, called the “middle chips,” is drilled with the pivot screw centered. This is the default geometry, as shown in the geometry chart. The other set is called the “flip chips” and depending on the orientation in which they are installed, they can raise or lower the BB height by 5mm and steepen or slacken the head angle by 0.4° from the default geometry.



HEAD TUBE CABLE GUIDES

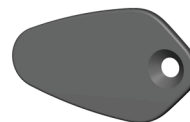
THERE ARE 3 INTERCHANGEABLE CABLE GUIDES THAT FIT THE COMPULSION.



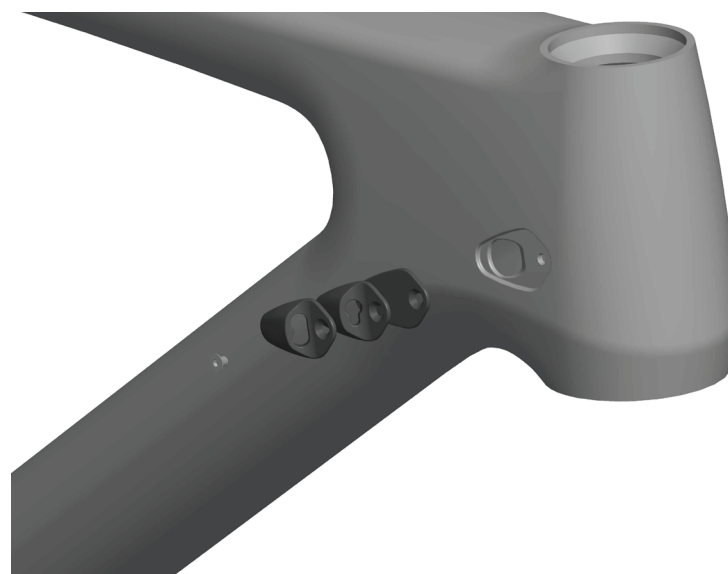
- Two Hole 5mm x 3mm (CCN098YB) This port fits a 4 or 5mm cable or hoses as well as a E-tube wire.



- Two Hole 5mm (CCN099YB) This Cable port fits two 4 or 5mm cables or hoses.



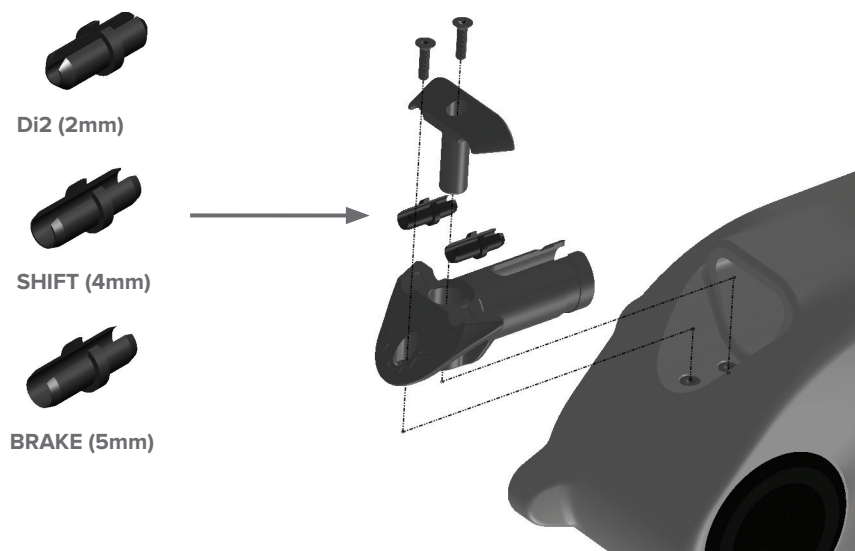
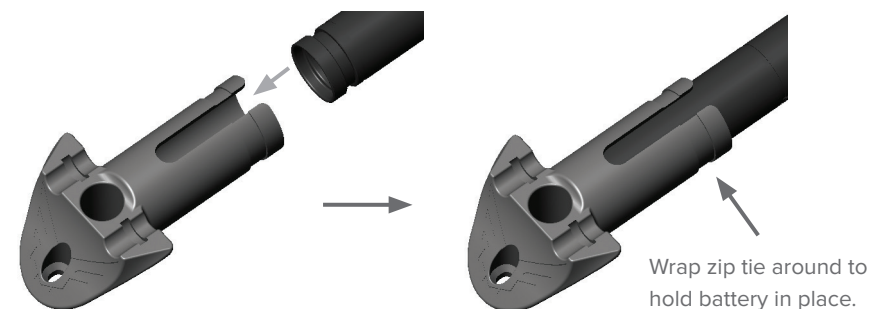
- Blanking plate (CCN096YB) This covers the cable port when it is not used





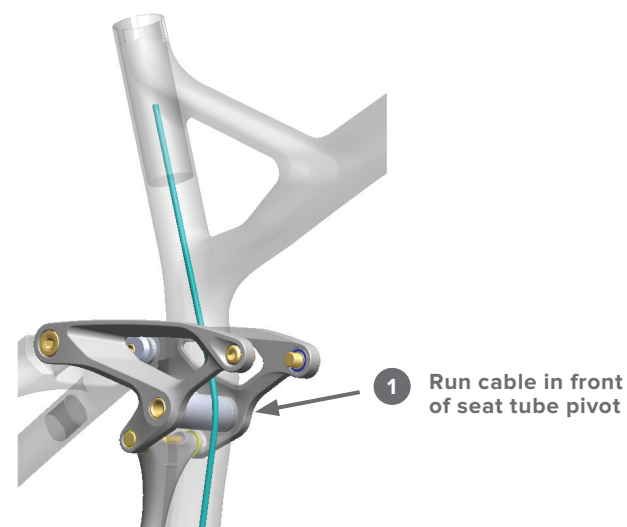
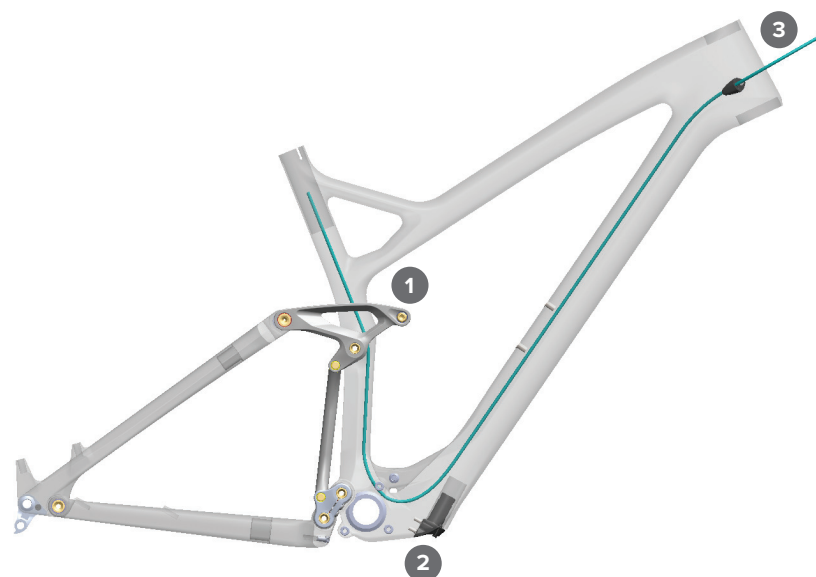
BOTTOM BRACKET CABLE GUIDES

The bottom bracket cable guide can be adapted to different configurations with rubber reducers for different sizes of cables. It can also be used as a battery holder.



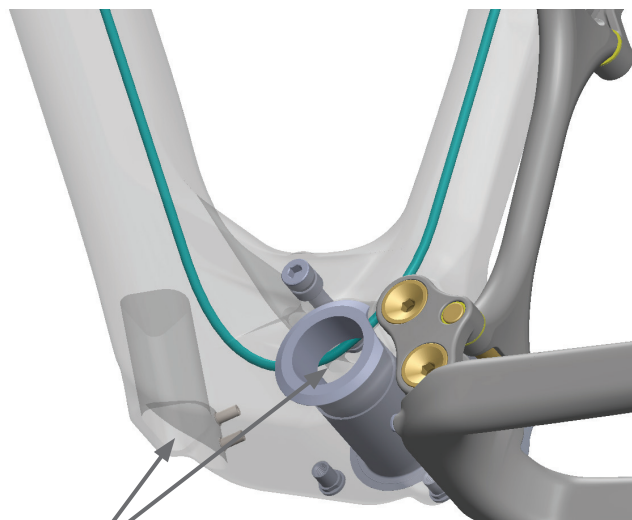
DROPPER POST ROUTING

ORDER 1, 2, 3

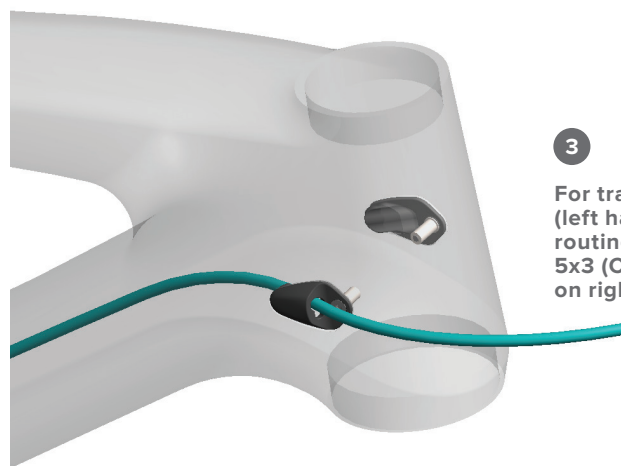




▼ DROPPER POST ROUTING



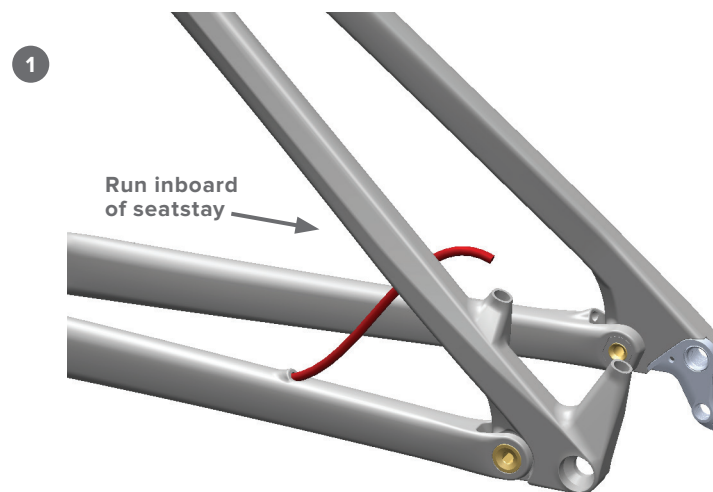
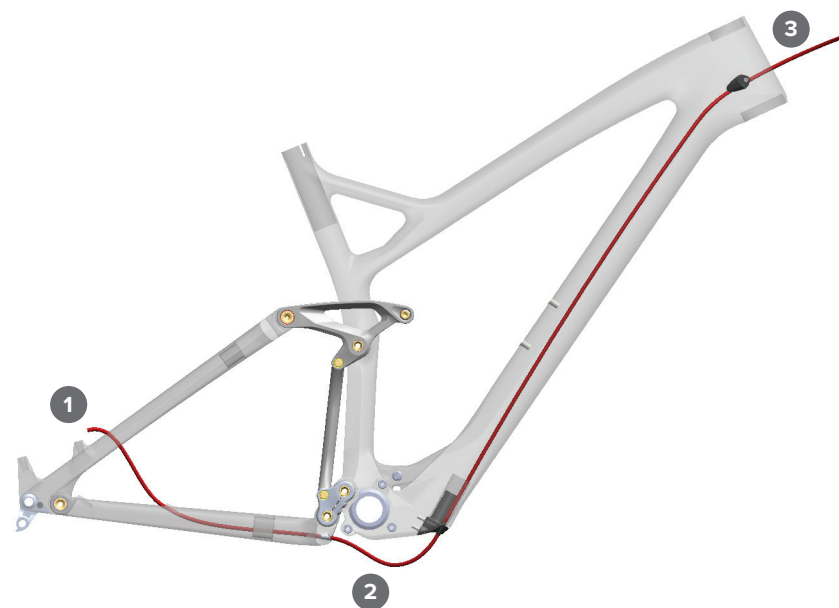
2 Cable can be accessed through the BB shell and down tube cable port to guide it.



3 For traditional (left hand) dropper routing use 2-hole 5x3 (CCN098YB) on right side.

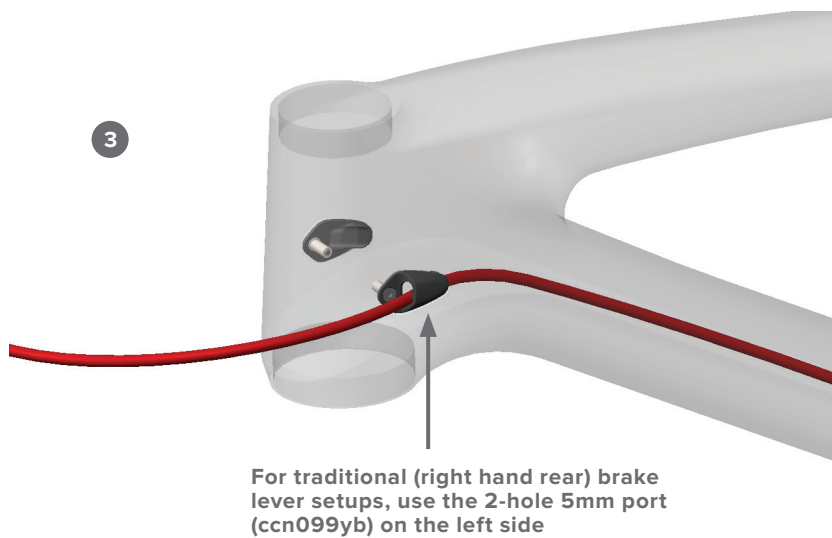
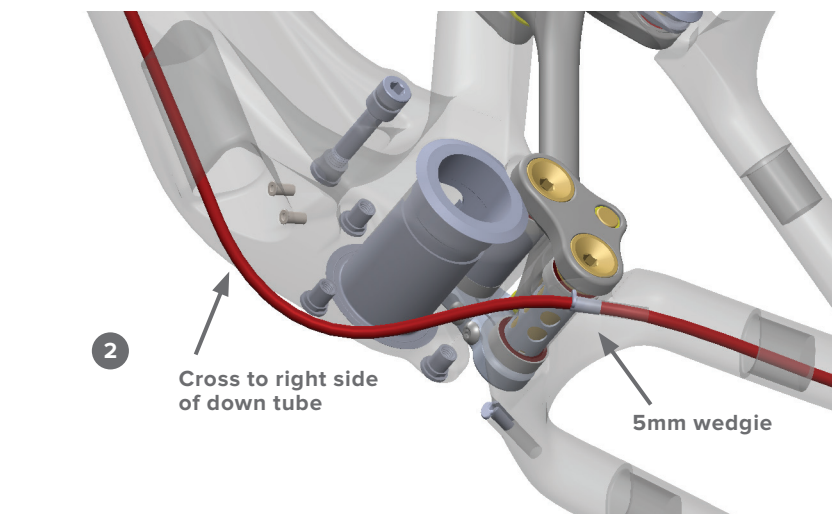
▼ REAR BRAKE ROUTING

ORDER 1, 2, 3



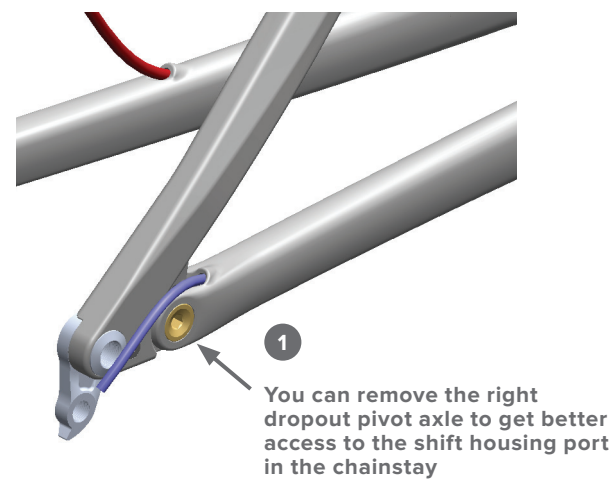


REAR BRAKE ROUTING



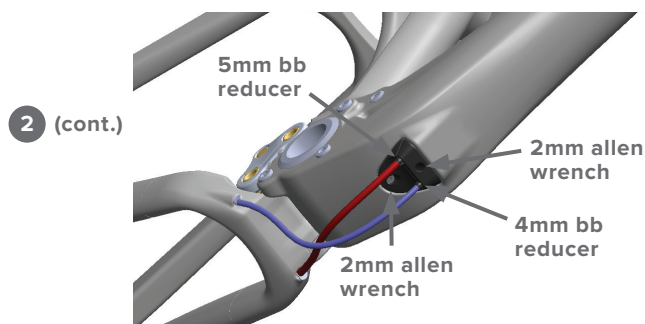
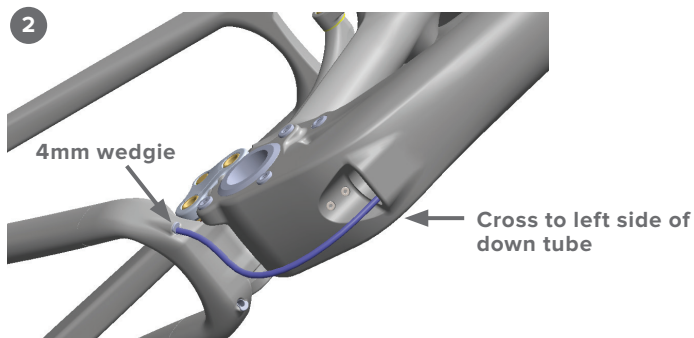
REAR SHIFTER ROUTING

ORDER 1, 2, 3

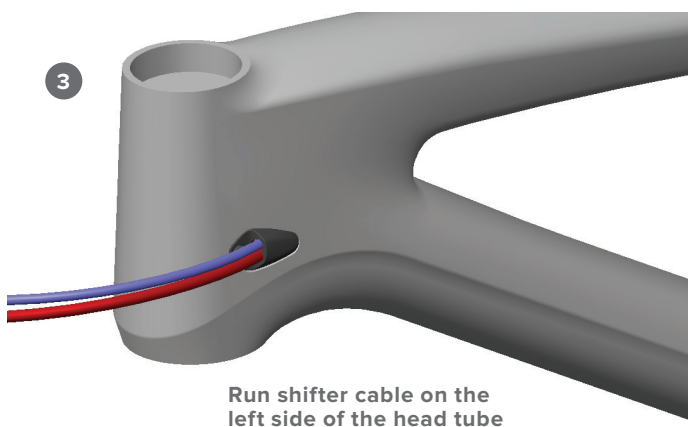




REAR SHIFTER ROUTING



Before tightening the BB cable guide screws, move the suspension through its entire range of travel to insure smooth articulation of the brake and shift cables.

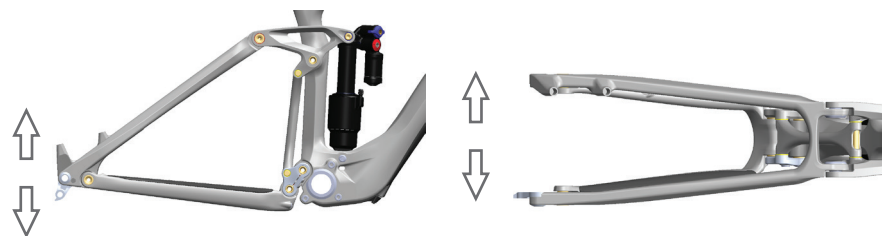


SUSPENSION PIVOT EVALUATION

In order to achieve optimum suspension performance, Felt recommends performing a simple pivot checking procedure after every 100 hours of riding or annually, whichever comes first. If any issues are discovered, please refer to the bearing removal/installation section or take your bike to the nearest Felt dealer.

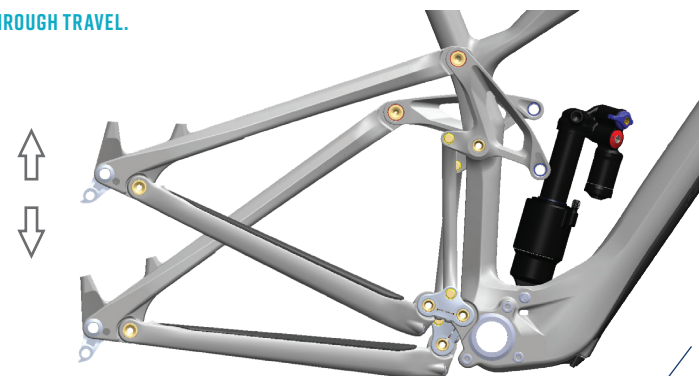
PIVOT CHECKING PROCEDURE

1. Check torque on all pivot bolts. If bolts are loose, remove, clean and apply Loctite 242, then tighten to correct torque (see technical section for torque values).
2. With the shock installed, apply pressure vertically and horizontally to feel for any play in the pivots. If play is discovered, please refer to the technical section for more information and instructions for bearing removal/installation.



3. With the shock removed, move the suspension through its travel. There should be little to no resistance. If there is any resistance, please refer to the technical section for more information and instructions for bearing removal/installation.

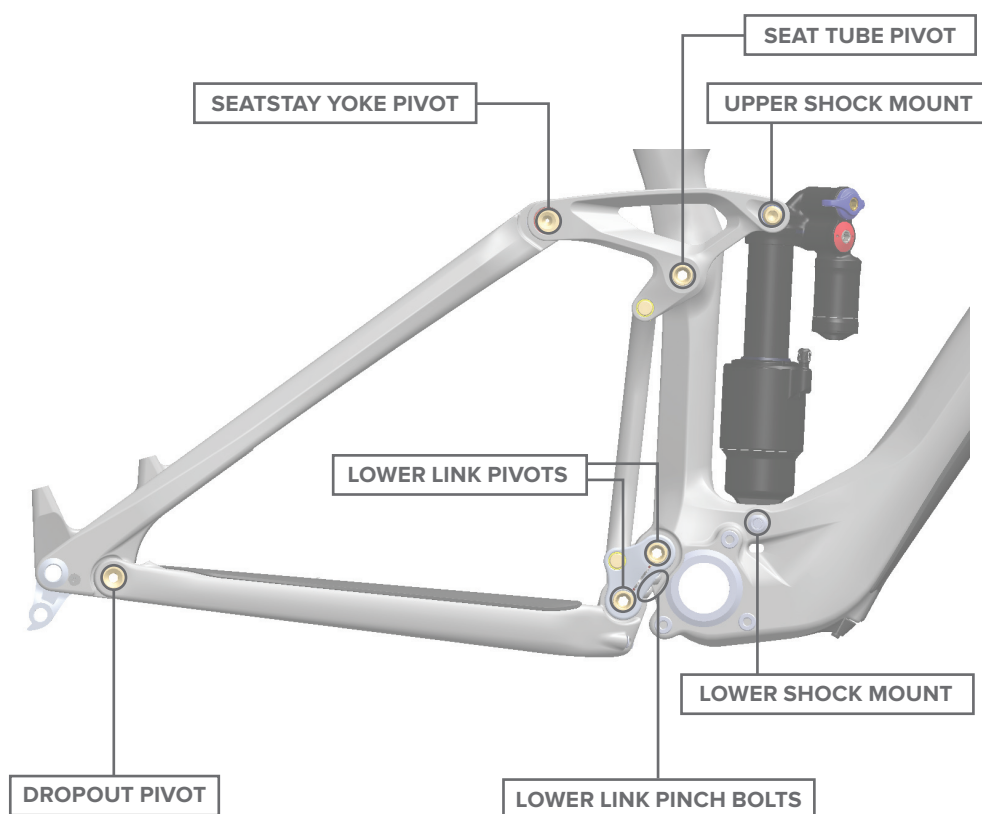
MOVE REAR TRIANGLE THROUGH TRAVEL.





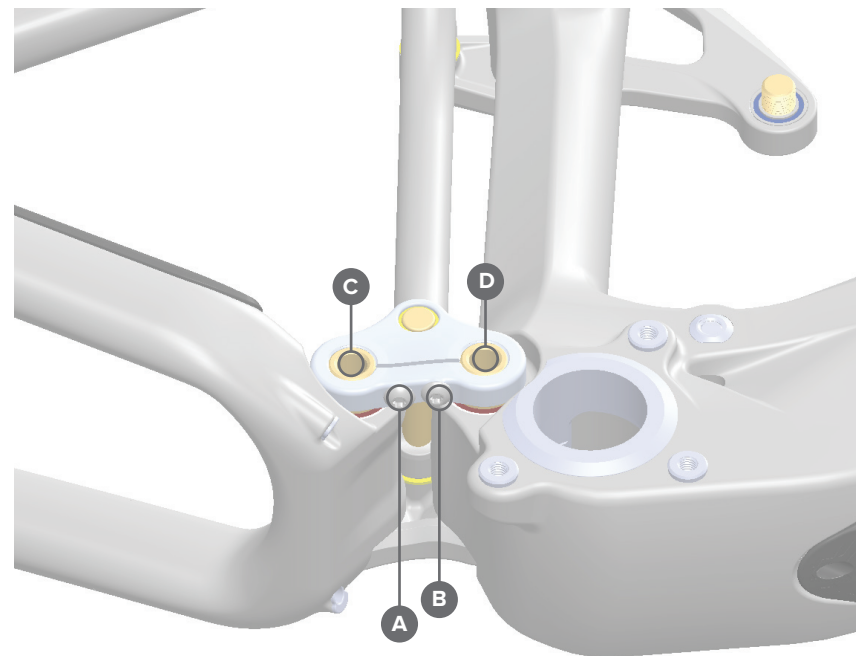
PIVOT TORQUE VALUES

LOWER SHOCK MOUNT	15N-M
LOWER LINK PIVOT	18N-M
DROPOUT PIVOT	16N-M
SEATSTAY YOKE PIVOT	15N-M
SEAT TUBE PIVOT	18N-M
UPPER SHOCK MOUNT	13N-M
LOWER LINK PINCH BOLTS	8N-M



PIVOT TORQUE VALUES

With the shock removed, lift the rear axle up to gain access to the lower link pinch bolts. Loosen both pinch bolts with a T25 Torx wrench before removing lower link axles.



After reinstalling and tightening both lower axles, tighten each pinch bolt to 8 N-m. Repeat torquing each pinch bolt until neither one moves.

ORDER

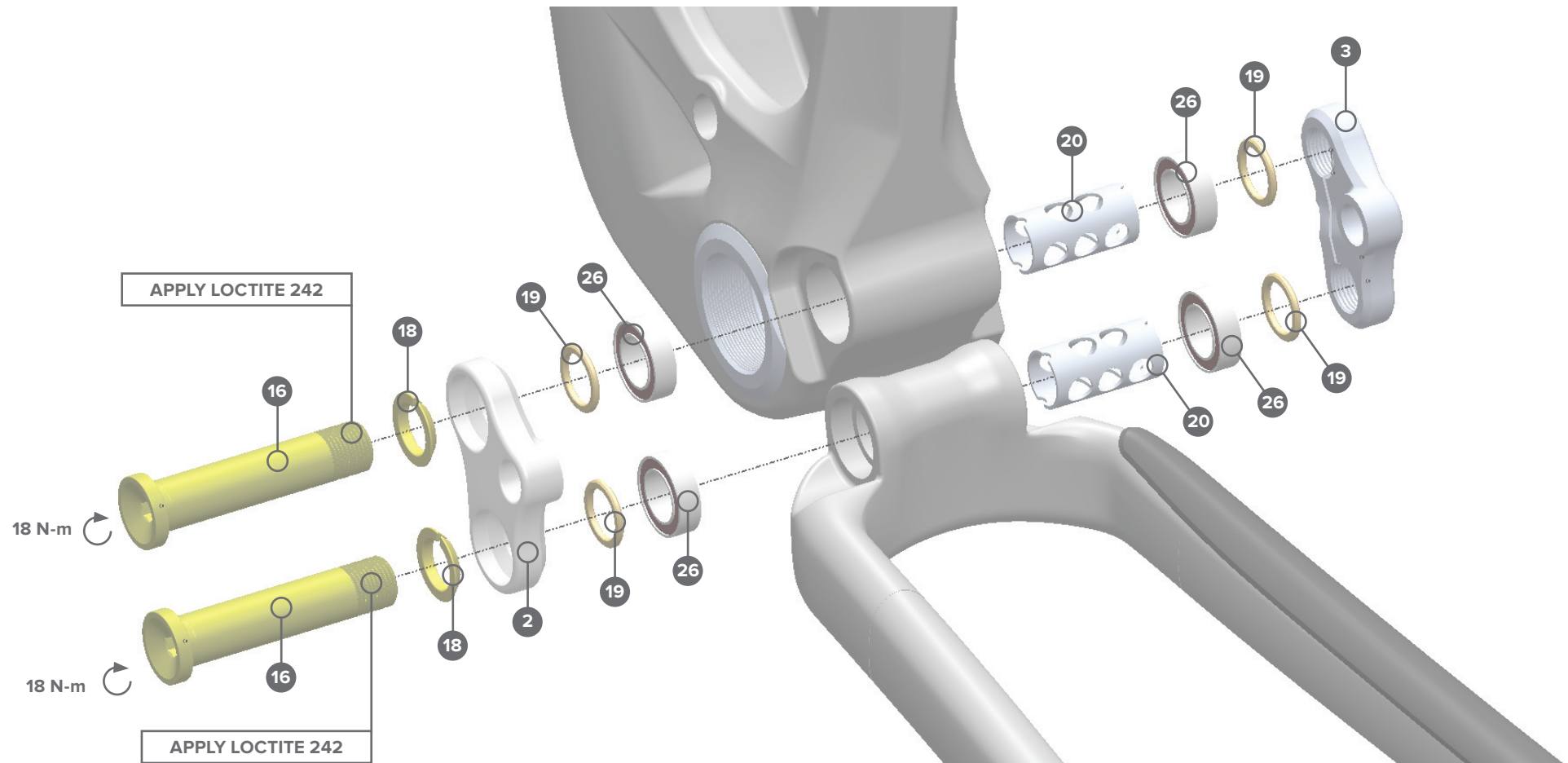
- C 18 N-m
- D 18 N-m
- A 8 N-m
- B 8 N-m
- A 8 N-m
- B 8 N-m



LOWER LINK PIVOTS

EXPLODED VIEW

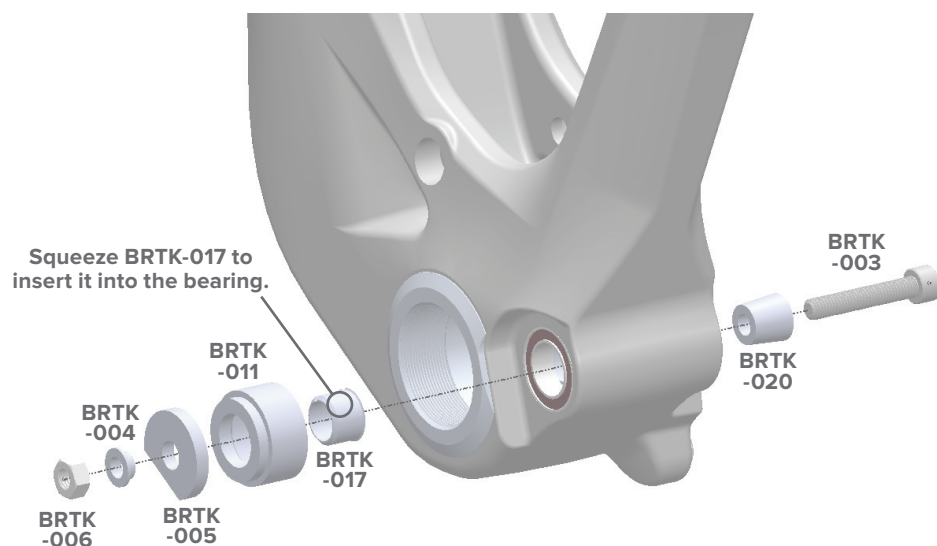
LOWER LINK PIVOTS





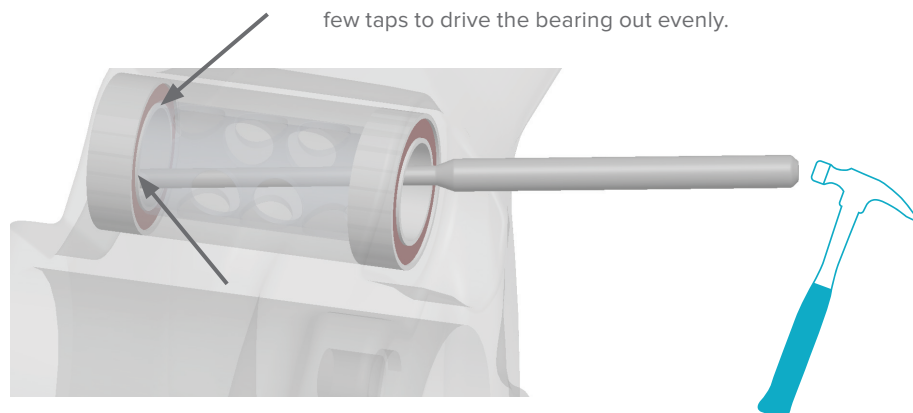
LOWER LINK PIVOTS

BEARING REMOVAL



ALTERNATE METHOD

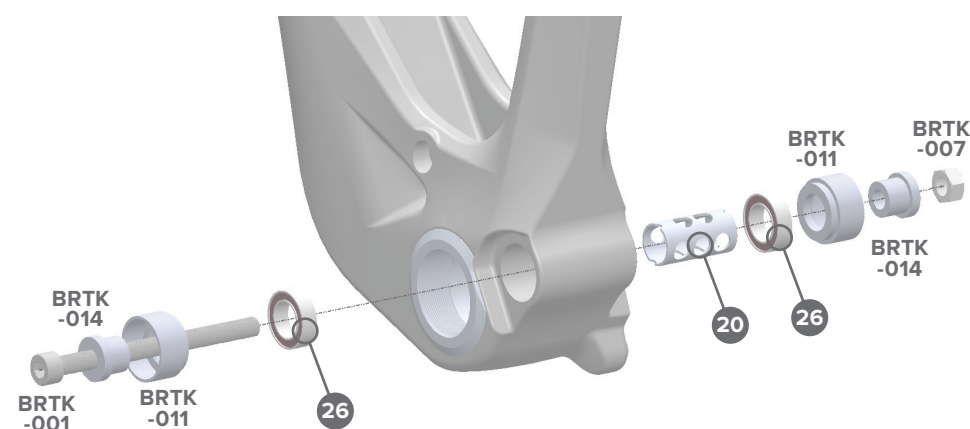
Use a pin drift and hammer to gently strike the inner race of the bearing. there are two cutouts at each end of the bearing support sleeve to allow access to the bearing inner race (arrows). Alternate between each cutout every few taps to drive the bearing out evenly.



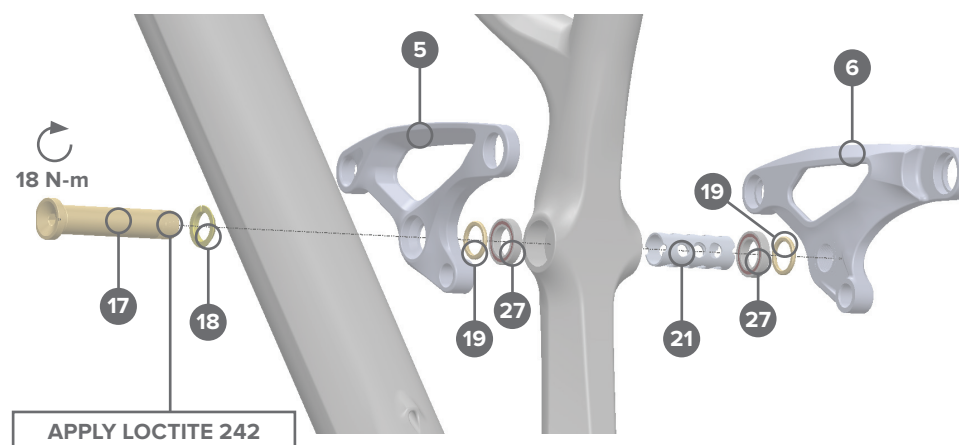
Bearings in the lower link pivot of the chainstay and the seat tube pivot can be removed in the same way.

LOWER LINK PIVOTS

BEARING INSTALLATION



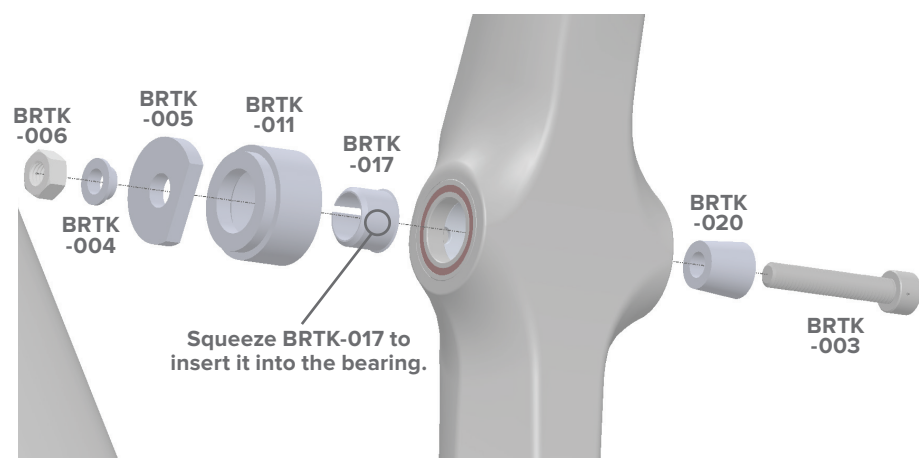
SEAT TUBE PIVOTS





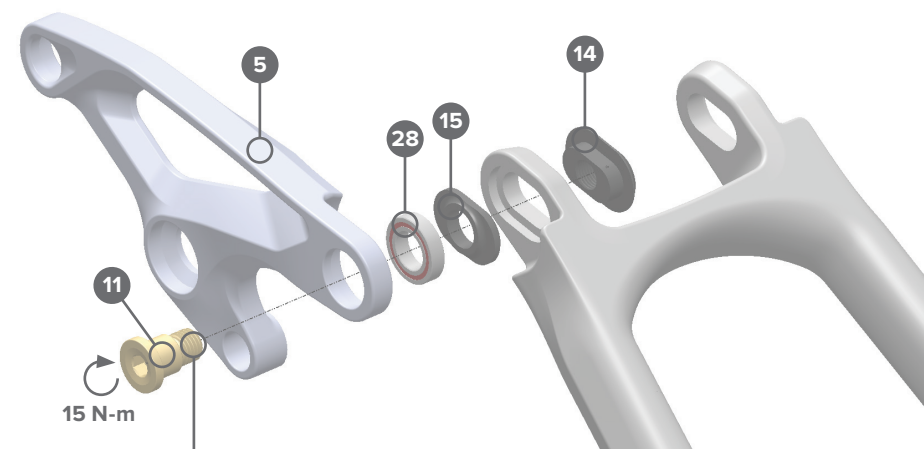
SEAT TUBE PIVOTS

BEARING REMOVAL



SEATSTAY YOKE PIVOTS

EXPLODED VIEW

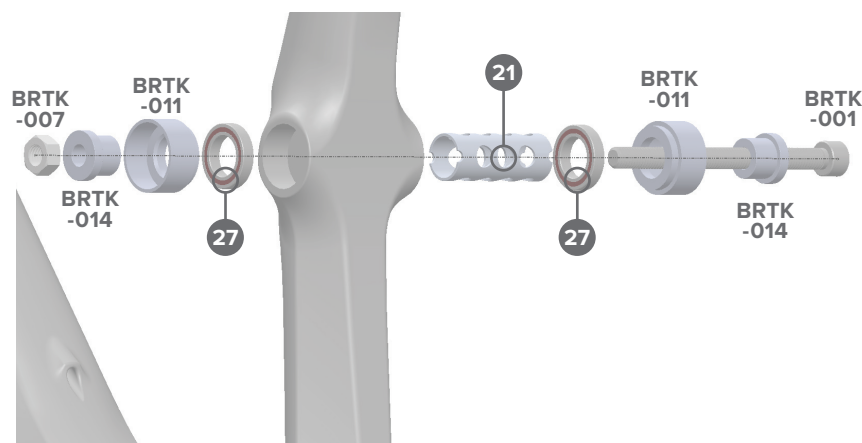


APPLY LOCTITE 242

Flip chips 12 and 13 can be substituted for middle chips 14 and 15, respectively. See page 6

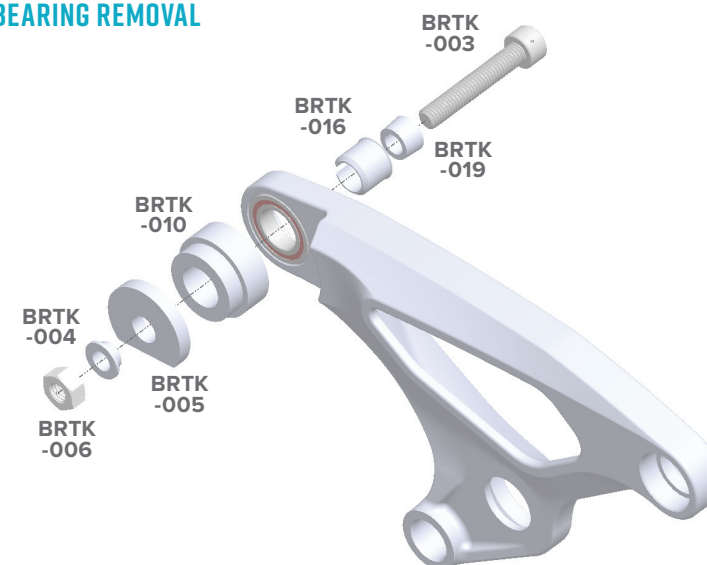
SEAT TUBE PIVOTS

BEARING INSTALLATION



SEATSTAY YOKE PIVOTS

BEARING REMOVAL





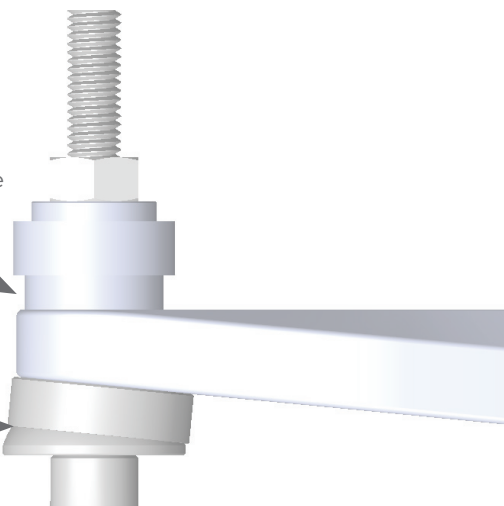


SHOCK MOUNTS

BEARING INSTALLATION CONTINUED

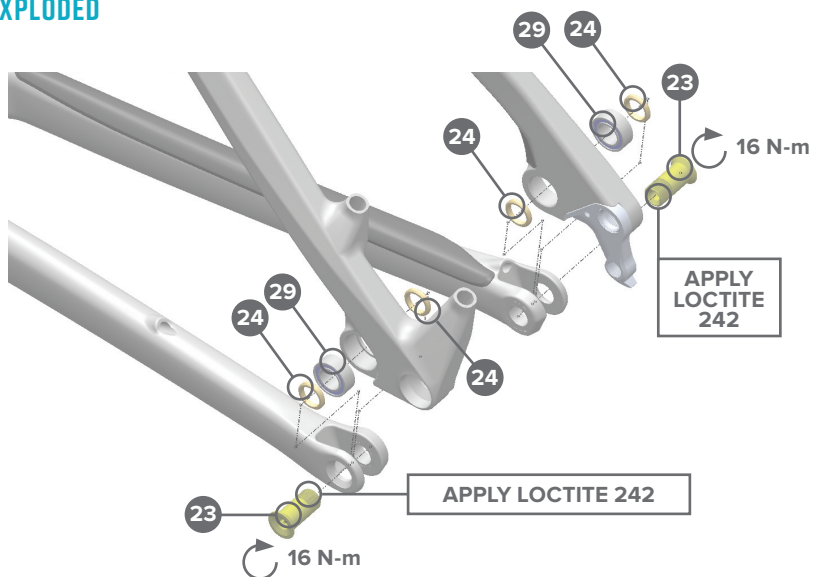
Make sure the bearing and tools are aligned with the *inboard* face of the upper link.

BRTK-023 and BRTK-024 will adjust to the angled outboard face of the link.



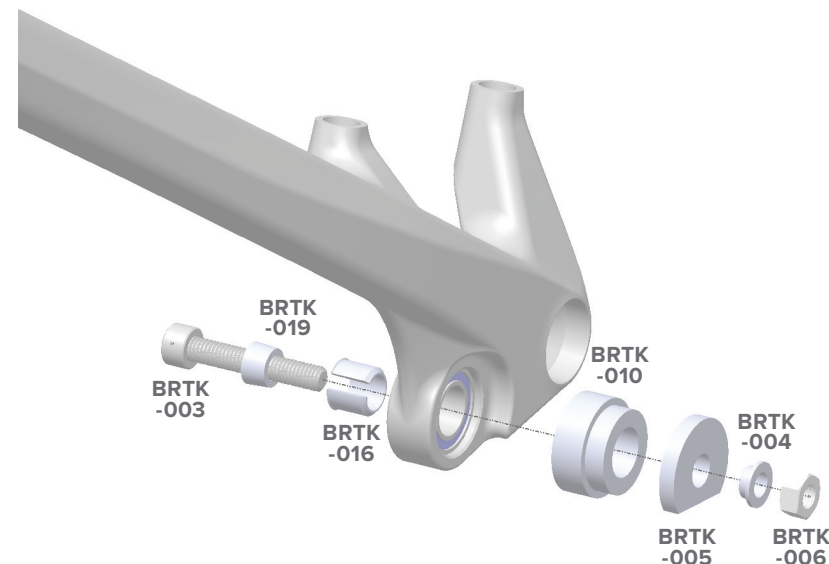
DROPOUT PIVOTS

EXPLODED



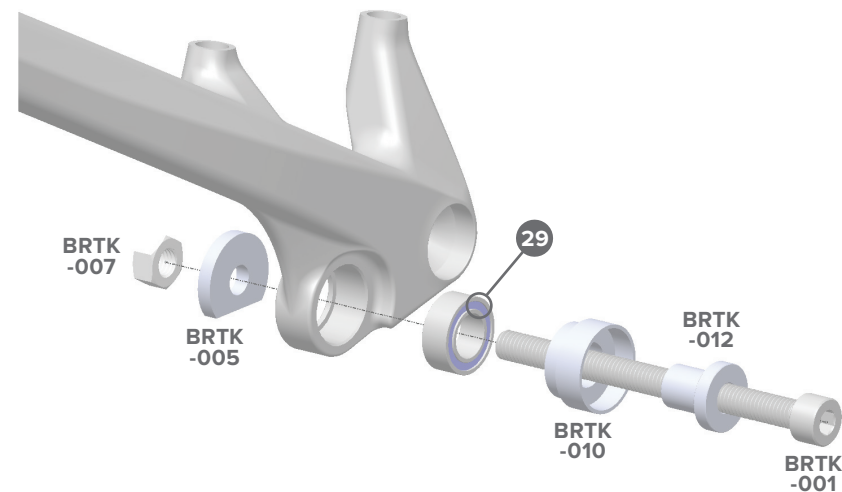
DROPOUT PIVOTS

BEARING REMOVAL



DROPOUT PIVOTS

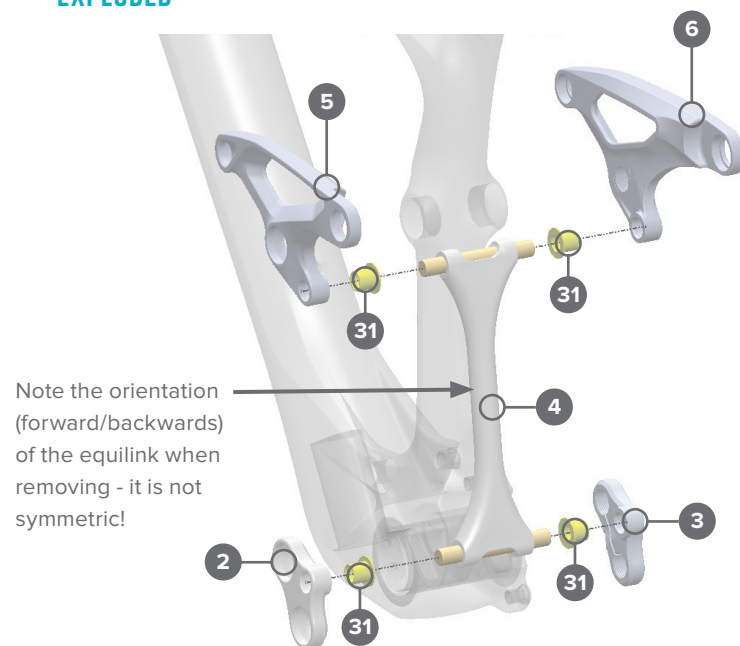
BEARING INSTALLATION





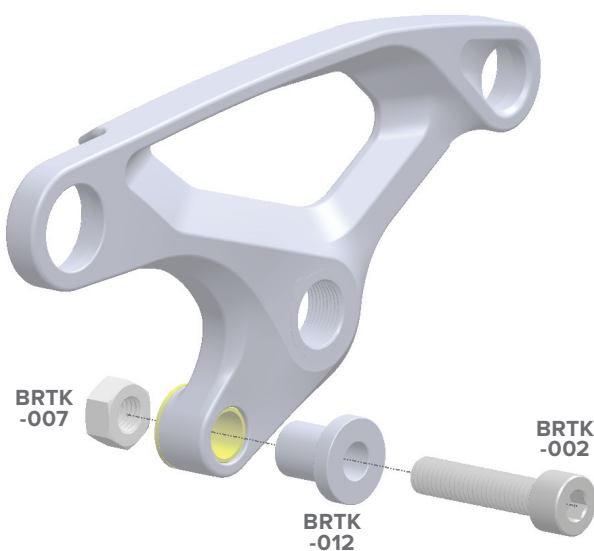
EQUILINK PIVOTS

EXPLODED



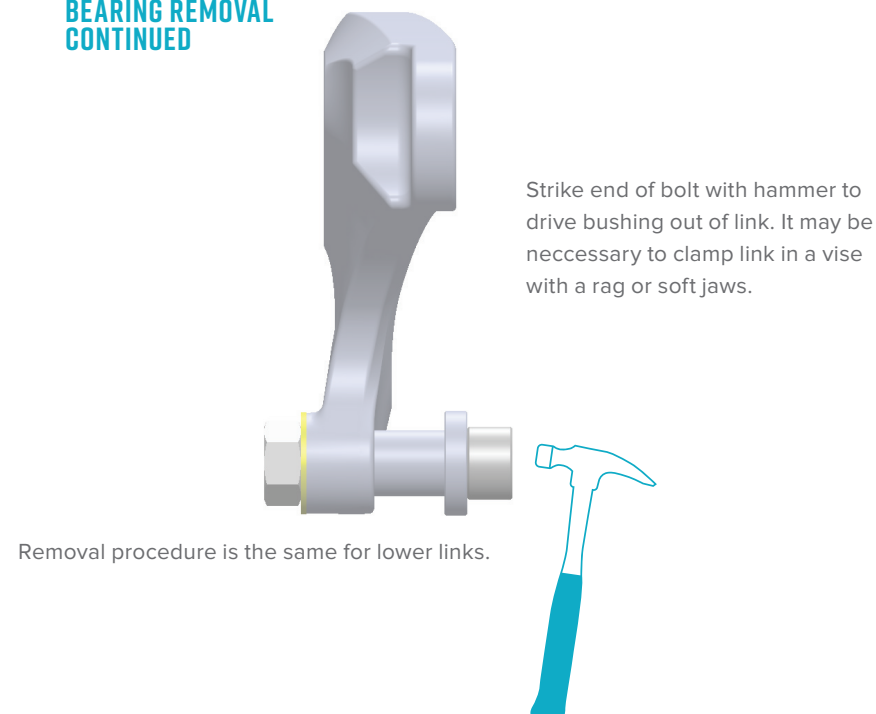
EQUILINK PIVOTS

BUSHING REMOVAL



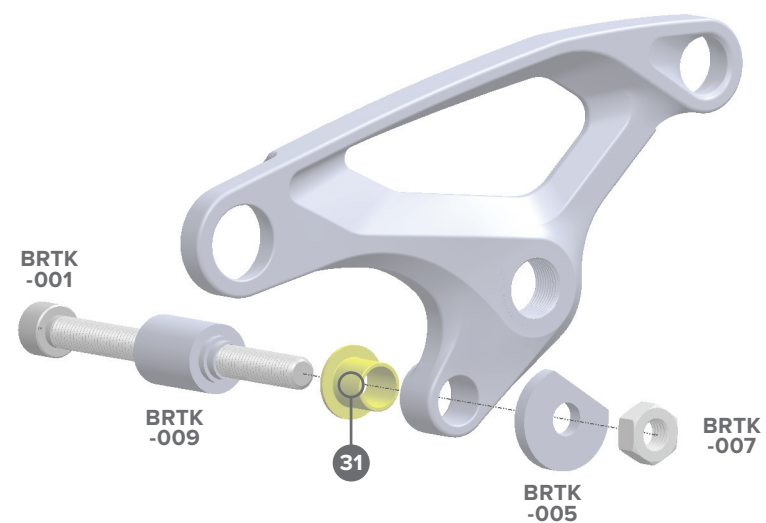
EQUILINK PIVOTS

BEARING REMOVAL CONTINUED



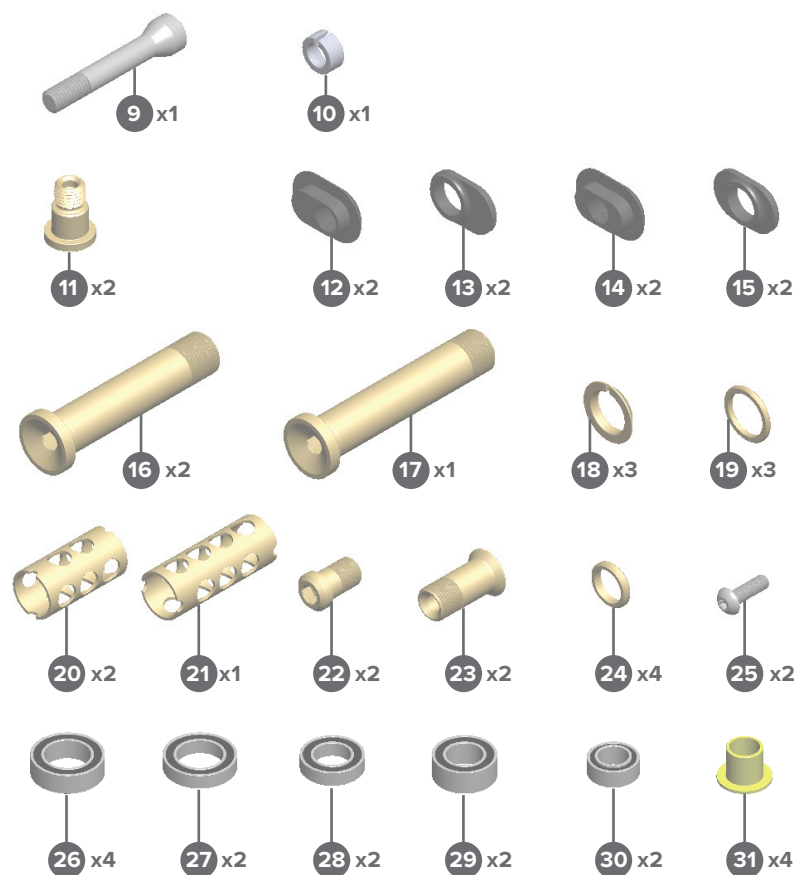
EQUILINK PIVOTS

BEARING INSTALLATION

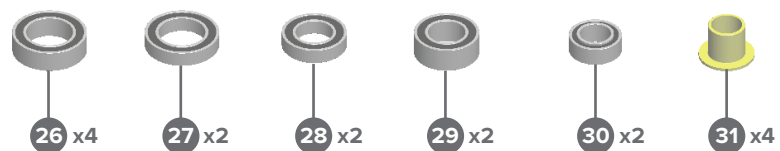




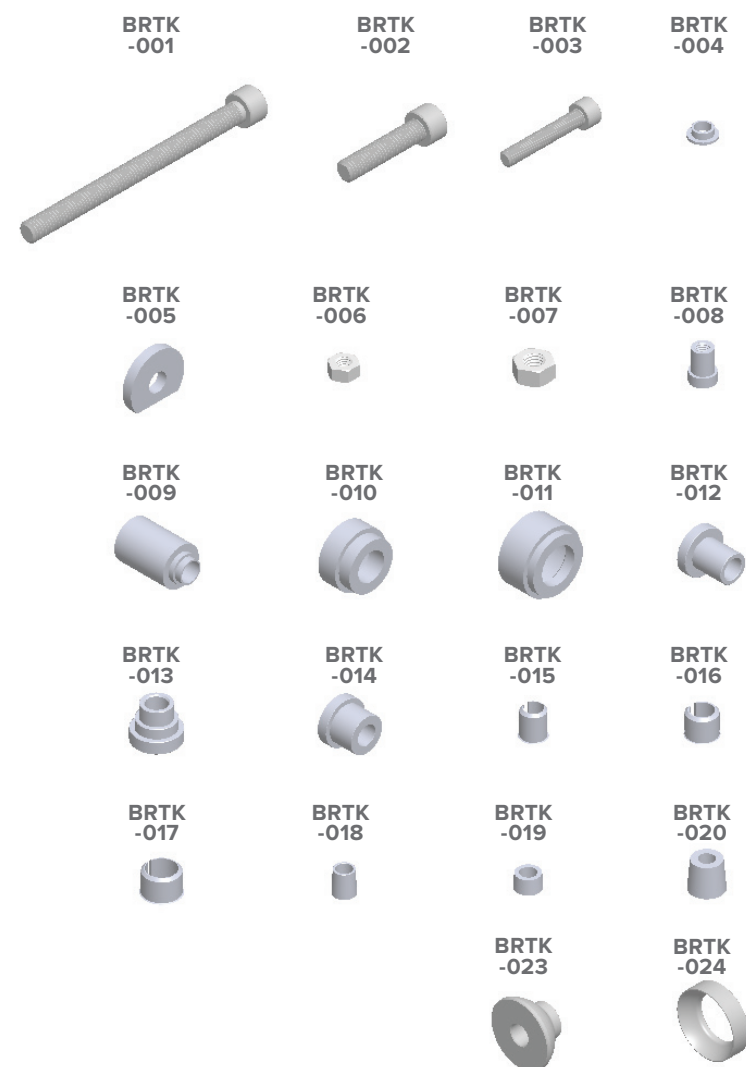
HARDWARE REBUILD KIT



BEARING KIT



TOOL KIT





MASTER PARTS LIST

01	Frame Member	Front Triangle		1
02	Frame Member	Lower Link, Left		1
03	Frame Member	Lower Link, Right		1
04	Frame Member	Equilink		1
05	Frame Member	Upper Link, Left		1
06	Frame Member	Upper Link, Right		1
07	Frame Member	Chainstay Assembly		1
08	Frame Member	Seatstay Assembly		1
09	Pivot Hardware	Lower Shock Bolt	Custom Cap Screw, M8 x 1.25 x 56.3mm	1
10	Pivot Hardware	Shock Bolt Collet	Custom Washer, ID 15mm x OD22mm x 3.5mm Thick	1
11	Pivot Hardware	Seat Stay Pivot Screw	Custom Bolt, M10 x 1.25 x 18.5	2
12	Pivot Hardware	Flip Chip (Inside)	Custom Oval Nut, M10 x 1.25	2
13	Pivot Hardware	Flip Chip (Outside)	Custom Oval Washer, ID 10mm	2
14	Pivot Hardware	Middle Chip (Inside)	Custom Oval Nut, M10 x 1.25	2
15	Pivot Hardware	Middle Chip (Outside)	Custom Washer, ID 10mm	2
16	Pivot Hardware	Lower Pivot Axle	Custom Bolt, M15 x 1.25, 72.5mm Long	2
17	Pivot Hardware	Upper Pivot Axle	Custom Bolt, M15 x 1.25, 78.8mm Long	2
18	Pivot Hardware	Collet Cone	Custom Washer, ID 15mm x OD22mm x 3.5mm Thick	3
19	Pivot Hardware	Main Pivot Spacer	Custom Washer, ID 15mm x OD20mm x 2mm Thick	6
20	Pivot Hardware	Lower Pivot Bearing Support	Custom Washer, ID 15mm x OD17.7mm x 34.7mm Thick	2
21	Pivot Hardware	Upper Pivot Bearing Support	Custom Spacer, ID 15mm x OD17.7mm x 45mm Thick	1
22	Pivot Hardware	Upper Shock Bolt	Custom Bolt, M10x1.0, 19.5mm Long	2
23	Pivot Hardware	Dropout Pivot Screw	Custom Bolt, M12x1.0, 26.5mm Long	2
24	Pivot Hardware	Dropout Pivot Spacer	Custom Spacer, 12mm ID x 16mm OD x 3mm Thick	4
25	Pivot Hardware	Lower Link Pinch Bolt	Torx Button Head Cap Screw, M5x0.8x16mm	2
26	Bearing	3802 LLB Max	ID 15mm, OD 24mm, 7mm Wide	4
27	Bearing	6802 LLB Max	ID 15mm, OD 24mm, 5mm Wide	2
28	Bearing	68012 LLB Max	ID 12mm, OD 21mm, 5mm Wide	2
29	Bearing	3801 LLU Max	ID 12mm, OD 21mm, 8mm Wide	2
30	Bearing	DRF 1017 2RS Max	ID 102mm, OD 17mm, 6/7mm Wide	2
31	Bearing	JFM1012-12	ID 12mm, OD 12mm, 12mm Wide	4

PLEASE NOTE

FELT OFFERS A BEARING REBUILD KIT AS WELL AS A COMPLETE HARDWARE REBUILD KIT. THERE IS ALSO A TOOL KIT FOR PROPER REMOVAL AND INSTALLATION OF THE BEARINGS. THE CONTENTS OF EACH ARE DISPLAYED IN THE PREVIOUS PAGES. INDIVIDUAL PARTS MAY ALSO BE ORDERED. CONTACT YOUR LOCAL DEALER FOR MORE INFORMATION.



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