



## Virtue Nine Manual

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### 1. Introduction To The Equilink:

Congratulations on purchasing this high quality Felt Equilink equipped bicycle. As with all of our bikes and components, our aim is to provide you, the rider, with the best possible product and therefore the best possible riding experience.

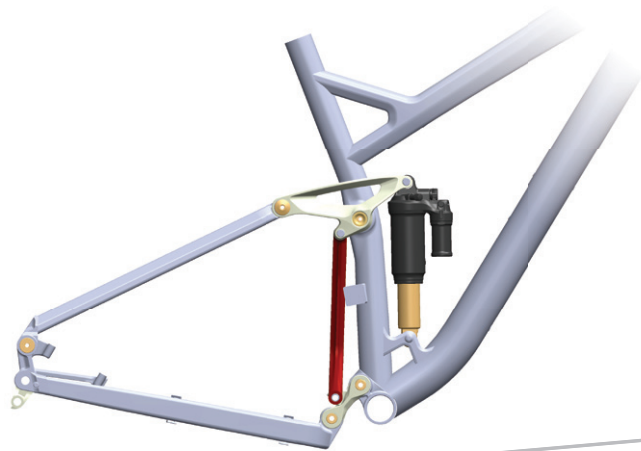
Please read this Equilink Owner's manual supplement thoroughly, as its purpose is to help you better understand your bike, set it up correctly, and care for it. If there are any questions that you still have after reading this guide, please contact your Felt Equilink Authorized Dealer, or visit our comprehensive Equilink website at [Feltbicycles.com](http://Feltbicycles.com).

Happy Trails!

### 2. The Equilink System Function Simply Explained:

In this illustration notice the red **Equilink** located behind the seat tube. The positioning of this special link counteracts weight transfer, so that the drivetrain doesn't have to.

As you pedal, the **Equilink** automatically pulls down on the upper horizontal link, which instantly negates and equalizes weight transfer. The harder you pedal the more weight transfer you initiate. The **Equilink** simply mirrors the effort, keeping a constant state of equalization. By allowing the drivetrain to do what it was meant to do (move you forward), we are able to maximize pedaling efficiency while allowing the suspension to remain equalized, and stay ultra-compliant as it moves freely over even the smallest of bumps.



### 3. Equilink Setup Guide:

Felt recommends that you start with between 20 and 30 percent sag. This will ensure that you get optimal performance from your Equilink equipped bicycle.

To determine your actual sag you must first slide the travel indicator on the shock absorber (the small "o"-ring on the effective shaft of the shock) upwards until it rests against the larger part of the shock. Then, with both hands on the respective handlebar grips throw a leg over the bike and gently allow your full body weight to compress the suspension. Then, slowly roll off lifting your weight off the bike. When you now look at the shock you will see that the o-ring has moved. The distance between the o-ring and the top body of the shock is the actual shock sag dimension.

For the Virtue this measurement should fall between 10mm and 15mm. For the Compulsion this measurement should be between 12mm and 18mm.

**Important:** Try not to "bounce" or sit up while applying weight to the bike. Doing so can drastically throw off the resulting measurement. If you feel you have made an error, you can easily slide the travel indicator up and start over.

Suggested sag settings should only be used as an initial starting point. In many cases the actual settings that work best for you may be different than what works for others due to riding style, terrain or simply personal preference. We suggest that you experiment with air pressure and damping settings to arrive at "your" desired feel. More sag (less air pressure) for a softer, suppler ride or less sag (more air pressure) for a firmer ride.

**WARNING:** The bicycle should be considered as a system when setting air pressures. Changing rear shock air pressure will effectively change the bikes geometry, so the fork air pressure/preload should be checked at the same time for correct sag to ensure proper geometry and handling. **Failure to do so could adversely affect steering and handling characteristics, resulting in possible loss of control, injury, or even death.** Refer to the fork owner's manual for instructions on setting correct sag, air pressure and damping settings. If you did not receive or misplaced your fork owner's manual, refer to the manufacturer's website for details on proper care and maintenance procedures.

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#### 4. Maintenance Overview:

While all Felt frames are designed to be strong and durable, a little preventive maintenance will protect your investment and provide endless hours of trail riding fun.

##### General Maintenance

All bearings used on Felt suspension frames are high quality sealed units. They are designed to provide a long working life; however keeping the bearings clean will extend their useful life.

When cleaning your bike, avoid the use of high pressure water or aerosol spray cleaners. Doing so will drive contaminants into the bearings, causing premature failure. The easiest and simplest way of cleaning the frame is using a bucket of soap and water. This will remove all exterior dirt and grime, preserving the integrity of the bearing seals.

When cleaning the frame it is good practice to periodically check for bearing wear.

1. With the bike in a work stand, clamped by the seat post, remove the rear wheel and deflate the rear shock.

2. Standing behind the frame, lift the rear dropouts, (Move suspension as shown in Fig.1) it should feel smooth, (with light resistance from the carbon rear triangle). Any grinding, notchiness or tight spots may be signs that the bearings need to be overhauled.



Fig. 1

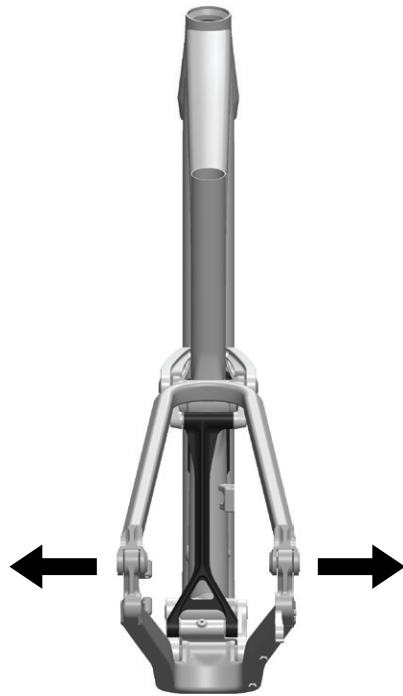


Fig. 2

3. If the suspension moves smoothly through its travel, check for any side to side movement. Hold the dropouts and try and move them to the left and right. Any looseness may be a sign of loose bearing bolts or worn bearings. (Move suspension as shown in Fig.2)

4. Check the bearing bolts, if any are loose tighten them to the torque spec that is conveniently laser etched into the dust shields. In some instances it may be necessary to reapply a thread locker before you retighten the bearing bolts.

5. If you notice any wear or problems with the bearings your easiest course of action is to replace them. Bearing replacement kits are reasonably inexpensive and the procedure is fairly simple. Bearing kits and complete rebuild kits are available through your local Felt Bicycles retailer.

6. For rear shock maintenance refer to the shock manufacturer's owner's manual that was included with your bike. If you did not receive or misplaced your shock owner's manual, refer to the manufacturer's website for details on proper care and maintenance procedures.

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## Bearing Replacement:

**IMPORTANT** - Read and thoroughly comprehend these instructions prior to beginning. Doing so will save you time in the long run and help keep your Felt frame running smoothly and safely.

Tools required:

Loctite 242 (Thread Locker)  
Anti-Seize Lubricant/Compound  
4mm, 5mm and 6mm Allen (hex) wrench  
Torque wrench (Metric) with 5 and 6mm hex bit  
10mm, 12mm and 15mm open wrench  
Bearing removal/installation tool kit  
Rubber/plastic faced hammer  
X-acto knife or dental pick  
Cleaner/degreaser  
Acetone or similar

## Frame Disassembly:

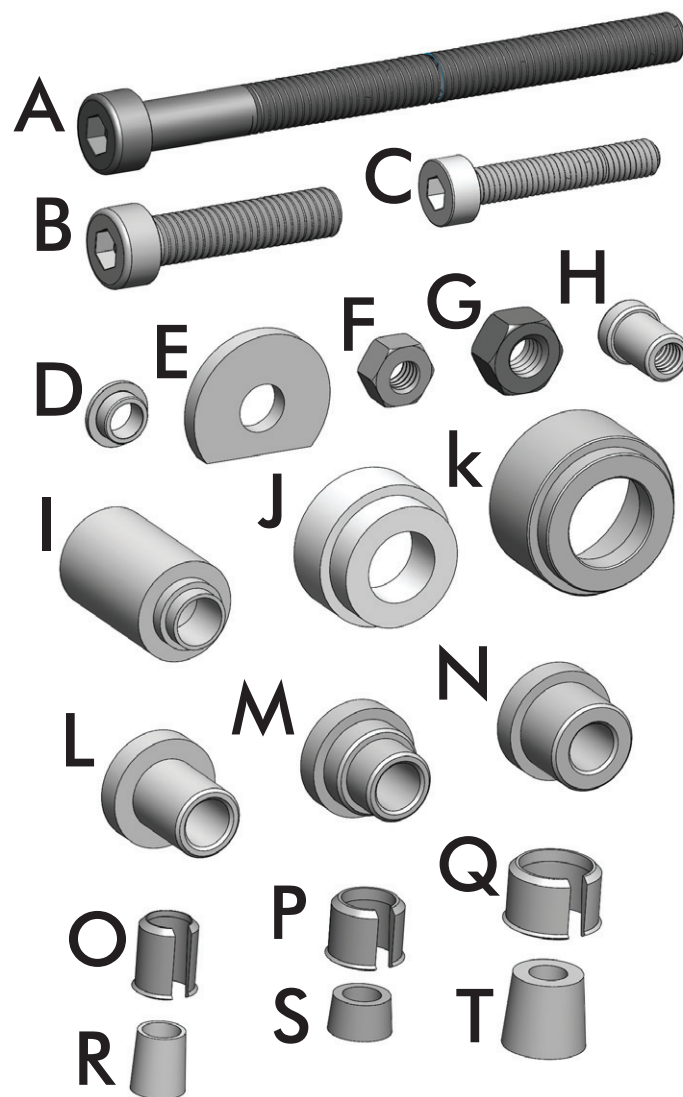
1. CLEAN YOUR BIKE!! Even if you clean your bike regularly, clean it again. Dirt and contaminants including oil and grease will affect the reassembly of the frame components and could prevent bearings from seating correctly and could also keep the Loctite from curing.
2. After correctly mounting your bike in a work stand (Remember to NEVER clamp any part of the frame in a repair stand!), remove the wheels, rear derailleur, rear brake caliper, crank set and BB. The fewer components on the frame, the easier it will be for you to work on!
3. Loosen each pivot bolt, but do not remove any hardware yet.
4. Deflate the shock, remove the shock mounting bolts and set the shock to the side.
5. Remove the seat stay axle and bolt assemblies that attach the rear triangle to the linkage. Be sure to not lose the acetal Thrust Washers that fit between the Links and the Seat Stay Yoke.
6. Now remove the bearing axle and collet from the Chain Stay Yoke. The rear triangle should be free from the frame. Be careful to not lose any stainless steel spacer washers.
7. Remove the set screw that fixes the lower Equilink axle in place and push the Equilink axle out to separate it from the lower link. Remove the 2 bolts in the shock links that are holding the upper Equilink axle. The Equilink will come out when you remove the shock links in the next step.

8. Remove the bolt from the left side shock link. Be careful to catch the stainless steel spacer washer between the link and the frame. Once the left link has been removed the Equilink is now free to be removed as well. Lastly slide the right shock link and axle out of the frame. Do not lose the acetal thrust washer on the link's axle.

9. Finally, remove the bearing axle and collet from the lower link and slide the link off of the frame. Be sure to catch the stainless steel spacer washers between the link and the frame.

## Master Bearing Tool Kit Diagram:

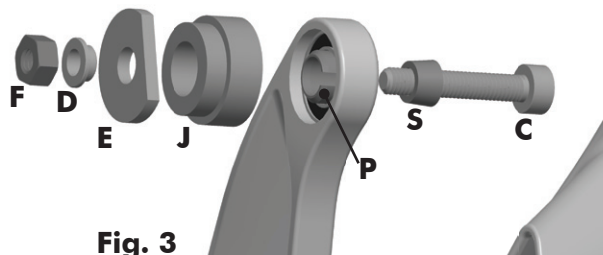
**Note:** Not all tools from the master tool kit will be needed for this model of Felt Bicycle and may not be included in your bike's tool kit.



## Removing Bearings:

Place the links flat on your bench and assemble the bearing removal tools as shown in fig. 3. Use an Allen wrench and open wrench to draw the bearings out of the links.

The same process can be used at the chainstay yoke (Fig. X), lower frame pivot (Fig. X), seat tube pivot bearings (Fig. X for Left and Fig. X for the right side).



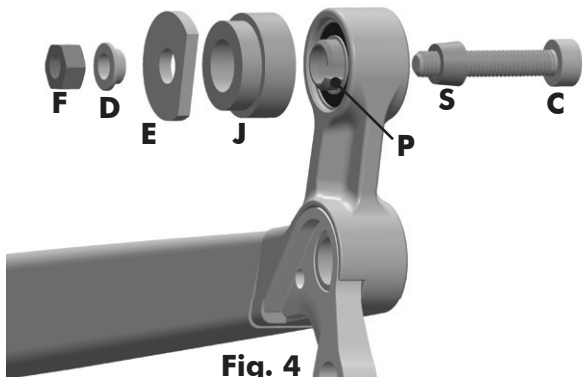
**Fig. 3**

2. Disassemble The dropout Pivots as follows: (Bikes with aluminum rear triangles only)

A) Remove the Chain stays from the seat stays by removing the Dropout Axle Bolt at each dropout and be sure to catch any stainless steel spacer washers.

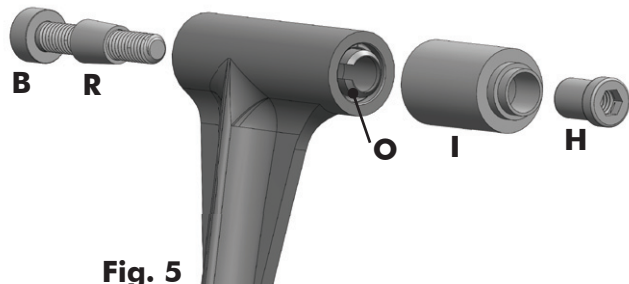
B) Orient the tools as seen in Fig. 4.

C) As you tighten the bolt the puller draws the bearing into the bearing cup. Repeat for all bearings in both the left and right dropouts.



**Fig. 4**

3. To remove the Equilink DU Bushings, orient the tools as shown in Fig. 5. Tighten the bolt until the DU has been drawn into the receiver. The same process works for all four DU bearings in the Equilink.



**Fig. 5**

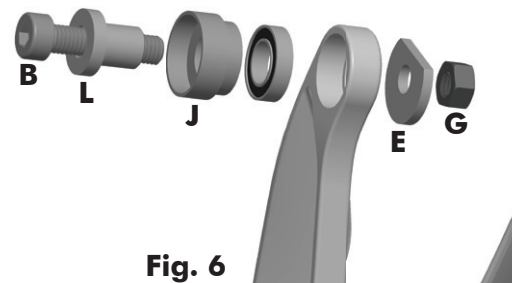
## Installing Bearings:

1. Once all the bearings have been removed, clean the bearing bores using the dental pick or X-acto knife to remove all traces of old bearing seating compound/green loctite. Wipe down the bearing bore with a Q-tip soaked in a small amount of solvent such as acetone. This will remove any last traces of loctite and other contaminants. Don't get solvent on any other portion of the frame or rear triangle as damage to the paint or carbon resin may occur.

**IMPORTANT** - The properties that make Acetone and similar solvents work so well as a cleaner can also harm paint and break down carbon fiber resin. Be very careful where you apply the solvent as it may compromise the integrity of the rear triangle and/or the paint finish of your frame.

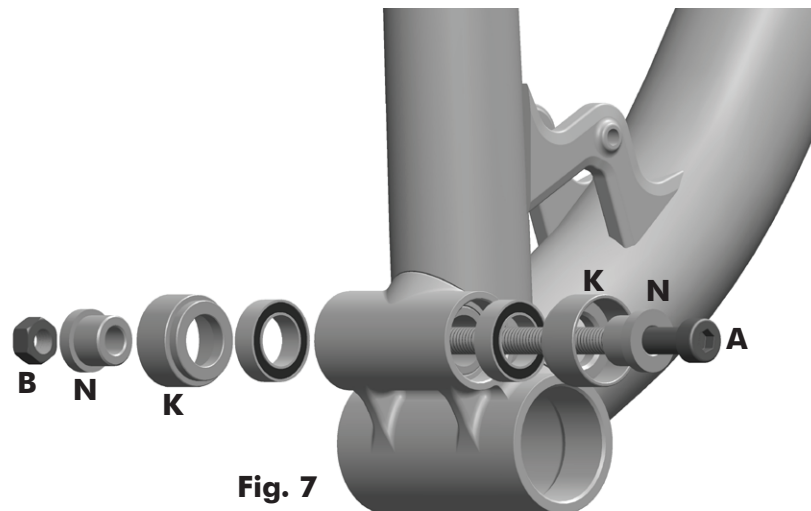
(Caution-Eye and Hand protection should **ALWAYS** be used when handling solvents to avoid contact!)

2. Once you've cleaned the bearing bores, apply a small amount of grease to the inside surface of the bearing bore and the outside of the bearing. Assemble the bearing installation tool (as shown in Fig.6). Using the Allen wrench and open wrench to press (or draw) the bearing into place. Make sure the bearing is seated completely and cleanly into the link.



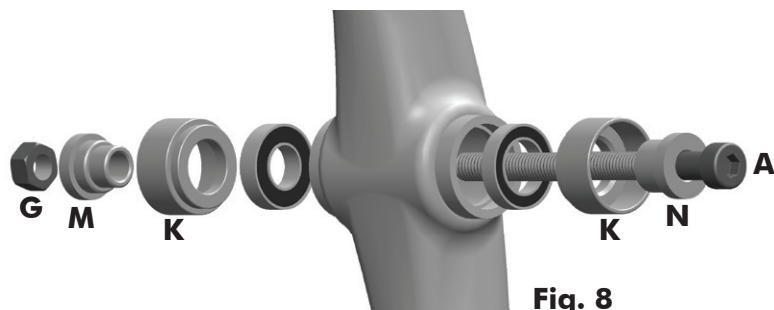
**Fig. 6**

3. To reassemble the lower link pivots at the chainstay and above the bottom bracket, you will install both bearings per pivot at the same time. Orient the tools as shown in Fig. 7 and carefully press the bearings completely into the frame/chainstay yoke.



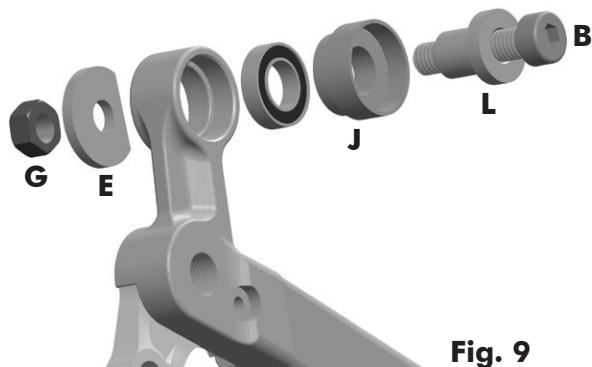
**Fig. 7**

4. To press new the bearings into the seat tube, orient the tools as shown in Fig. 8 and carefully press both bearings into the frame simultaneously.



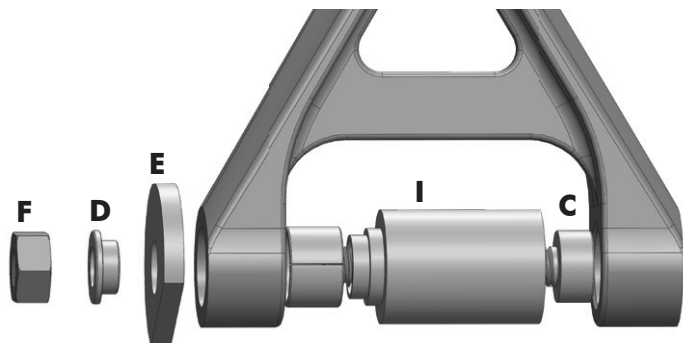
**Fig. 8**

5. To press fresh bearings into the dropout pivots (Bikes with aluminum rear triangles only) orient the tools as seen in Fig. 9. Install one bearing at a time and make sure to insert the correct stainless steel spacer washer between the bearings. The reducer tool should help keep the spacer washer centered while installing the second bearing.



**Fig. 9**

6. To press fresh DU Bushings into the Equilink, orient the tools as seen in Fig. 10. The EQ DU Press (N) should center itself inside the DU Bushing. Tighten the bolt until the Flange on the EQ DU Press touches the Equilink. The tool is designed to set the DU Bushings to the correct depth inside the Equilink. Repeat for all 4 Equilink DU Bushings



**Fig. 10**

7. After making sure that the bearing bolt/dust shield assemblies are cleaned of any contaminants, discard any damaged bearing bolts. You are now ready to re-assemble the frame.

### Frame Reassembly:

(Note: use Loctite 242 on all threads when reassembling)

1. Take the rebuilt lower link along with the stainless steel spacer washers (placed on the inside between the bearing and the frame) and slide the link into place (some force may be required). Then reinstall the bearing axle and collet assembly, tightening it to 12Nm of torque.

2. Install the Equilink onto the lower link. The Equilink should be positioned so that the cutout at the top pivot faces the front triangle of your frame. Slide the end of the link, along with the press in polymer washers, over the lower link. Insert the lower Equilink Axle. Center the axle in the lower link and then tighten the set screw to a torque of 3Nm. Next press the polymer washers into the top pivot of the Equilink and slide the upper axle through the Equilink. This will have the Equilink ready for the next step.

3. Attach the rebuilt upper link plates to the frame, making sure the stainless steel spacer washer (non-drive side) and acetal thrust washer (drive side) are in place. Before installing the non-drive side link, be sure the upper Equilink pivot is assembled and positioned correctly between the 2 shock links. Tighten the shock link bolt to a torque of 12Nm and the upper Equilink pivot bolts to a torque of 8Nm each.

4. Attach the chain stays to the lower link. With the stainless steel spacer washers in place tighten the bearing bearing axle and collet assembly, tightening it to 12Nm of torque.

5. Attach the seat stays to the upper link. The links may need to be rotated up and down to position the link bolt holes in the correct position. Again, with the stainless steel spacer washers in place tighten the bearing axle to 10Nm of torque.

6. Reconnect the dropout pivots. Assemble the spacer washers outside the bearings in the dropouts and slide the seat stay clevises over the bearings and spacers. Insert the bolt from the outside of the frame through the bearings and tighten this pivot to a torque of 10Nm.

7. Re-install the shock, remembering that the upper and lower bolts could be different lengths. Once the bolts are assembled in their proper locations they will need to be tightened to a torque of 8Nm.

8. Once complete, re-inflate the shock to your preferred pressure and/or recommended sag (see Section 3 of this manual for proper sag settings).

10. Reinstall any parts you removed initially to access your suspension components.

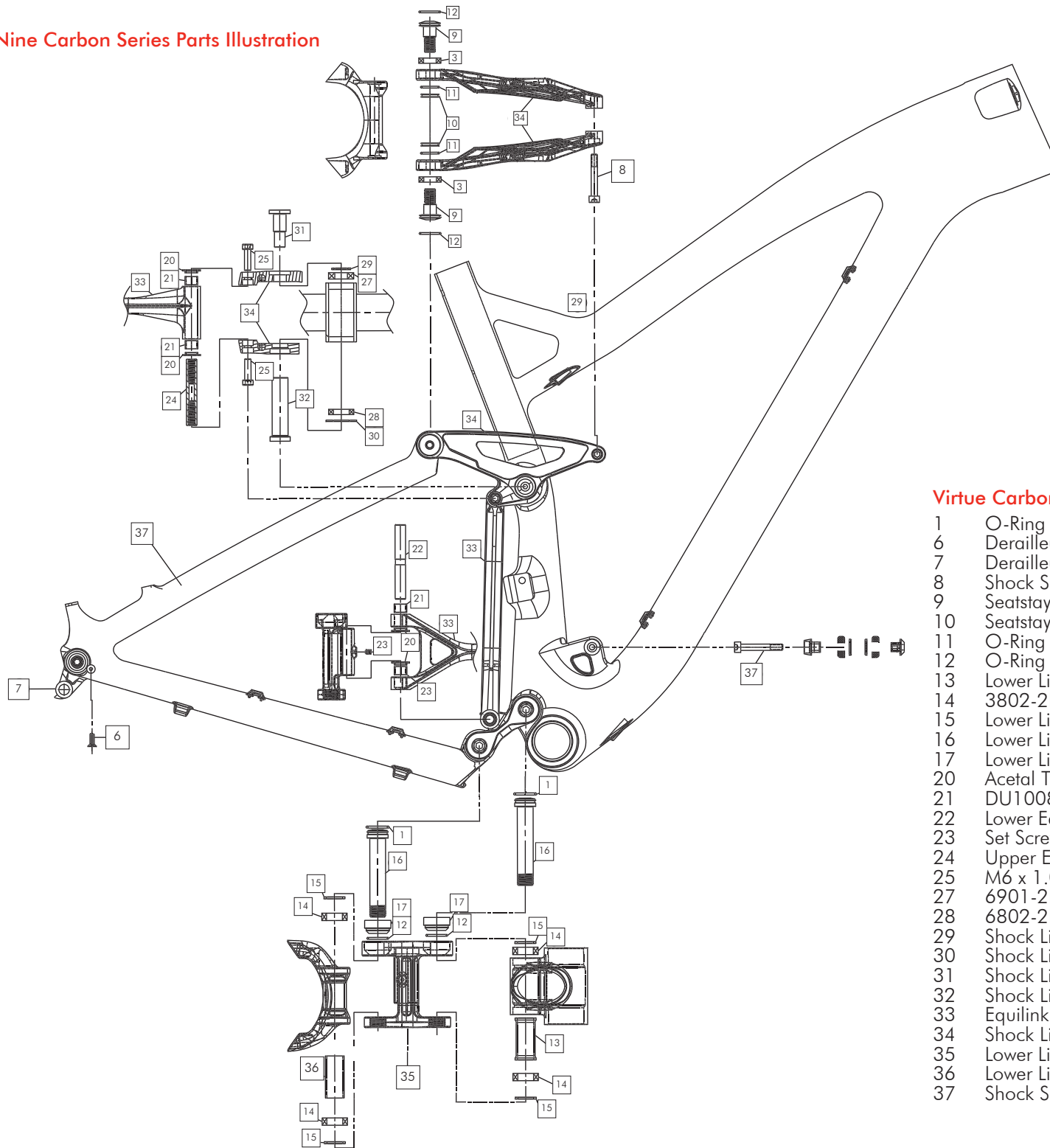
11. All pivot and mounting bolts should be re-checked for correct tightness/torque after the first ride and periodically every few rides after that.



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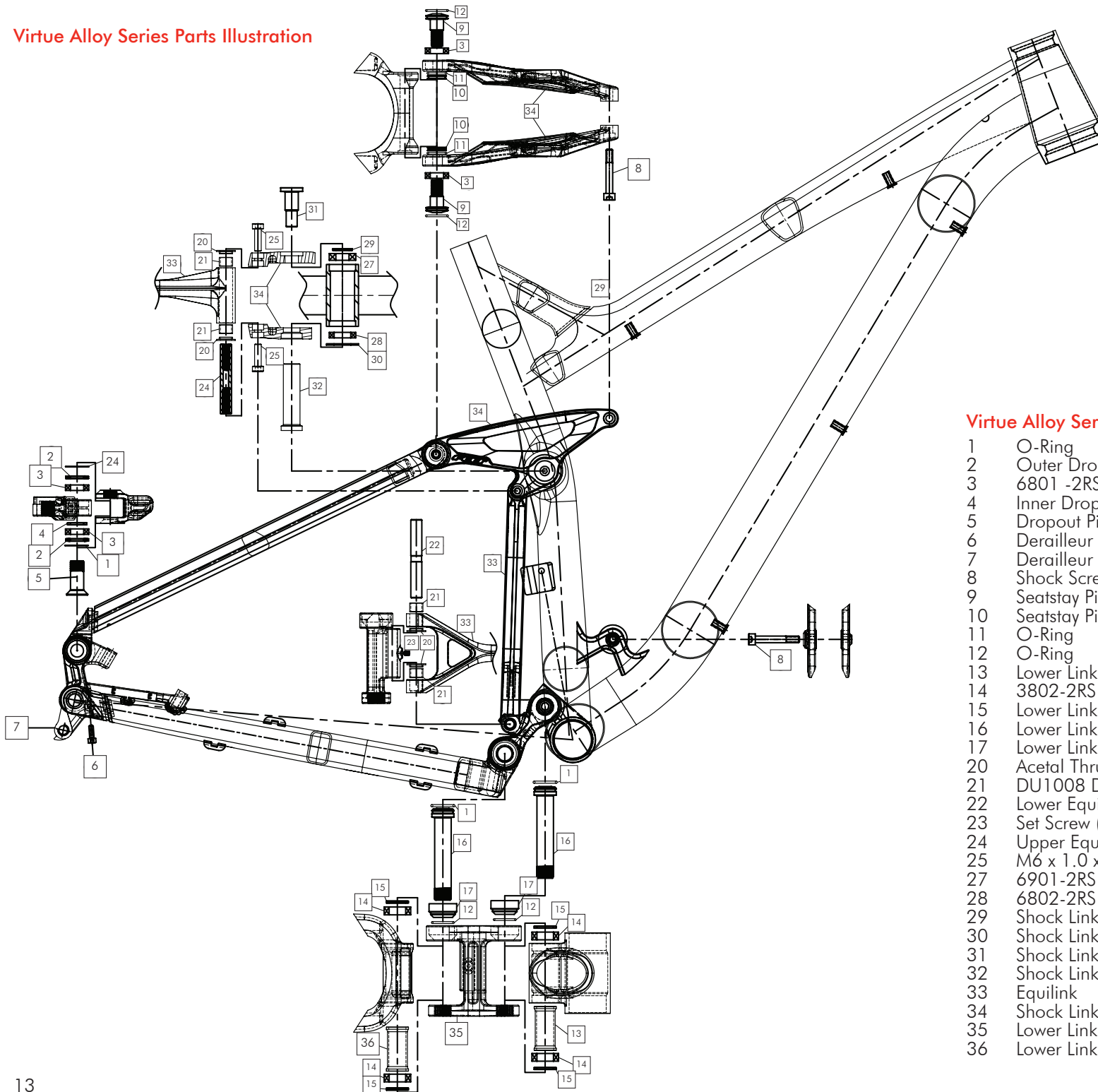
## Virtue Nine Carbon Series Parts Illustration



### Virtue Carbon Series Parts List

		QTY / Bike
1	O-Ring	2
6	Derailleur Hanger Screw	1
7	Derailleur Hanger	1
8	Shock Screw (M8 x 1.25 x 40mm Lg. SHCS)	1
9	Seatstay Pivot Shoulder Screw	2
10	Seatstay Pivot Spacer	2
11	O-Ring	2
12	O-Ring	4
13	Lower Link Pivot Sleeve	1
14	3802-2RS Dual Row Ball Bearing	4
15	Lower Link Pivot Spacer	4
16	Lower Link Axle	2
17	Lower Link Collet	2
20	Acetal Thrust Washer	4
21	DU1008 DU Bushing	4
22	Lower Equilink Axle	1
23	Set Screw (M4 x 0.8 x 5mm Lg.)	1
24	Upper Equilink Axle	1
25	M6 x 1.0 x 20mm Lg SHCS	2
27	6901-2RS Ball Bearing	1
28	6802-2RS Ball Bearing	1
29	Shock Link Pivot Spacer	1
30	Shock Link Thrust Washer	1
31	Shock Link Pivot Screw	1
32	Shock Link Axle (Not Removable)	1
33	Equilink	1
34	Shock Link (Pair)	1
35	Lower Link	1
36	Lower Link Pivot Sleeve (Straight)	1
37	Shock Screw (M8 x 1.25 x 45mm Lg. SHCS)	1

## Virtue Alloy Series Parts Illustration



### Virtue Alloy Series Parts List

		QTY / Bike
1	O-Ring	6
2	Outer Dropout Pivot Spacer	4
3	6801 -2RS Ball Bearing	6
4	Inner Dropout Pivot Spacer	2
5	Dropout Pivot Screw	2
6	Derailleur Hanger Screw	1
7	Derailleur Hanger	1
8	Shock Screw (M8 x 1.25 x 40mm Lg. SHCS)	2
9	Seatstay Pivot Shoulder Screw	2
10	Seatstay Pivot Spacer	2
11	O-Ring	2
12	O-Ring	4
13	Lower Link Pivot Sleeve (Hourglass)	1
14	3802-2RS Dual Row Ball Bearing	4
15	Lower Link Pivot Spacer	4
16	Lower Link Axle	2
17	Lower Link Collet	2
20	Acetal Thrust Washer	4
21	DU1008 DU Bushing	4
22	Lower Equilink Axle	1
23	Set Screw (M4 x 0.8 x 5mm Lg.)	1
24	Upper Equilink Axle	1
25	M6 x 1.0 x 20mm Lg SHCS	2
27	6901-2RS Ball Bearing	1
28	6802-2RS Ball Bearing	1
29	Shock Link Pivot Spacer	1
30	Shock Link Thrust Washer	1
31	Shock Link Pivot Screw	1
32	Shock Link Axle (Not Removable)	1
33	Equilink	1
34	Shock Link (Pair)	1
35	Lower Link	1
36	Lower Link Pivot Sleeve (Straight)	1



## 6. Equilink Carbon Care Guide:

1. This guide contains **important** information. Please read carefully and store in a safe place.

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

Congratulations! The Felt Suspension frame you have chosen is among the finest products available in cycling. The Carbon fiber that is used in the rear triangle of some Equilink frames is a very special material that requires particular care during assembly, storage and riding. This short reference guide contains instructions and warnings specific to Felt Suspension frames that use these Carbon rear triangles.

Unlike metal parts, carbon composite parts that have been damaged may not bend, bulge or deform; a damaged part may appear to be normal to a cursory glance. After any high force load, like a crash, or other impact to your bicycle, thoroughly inspect all the parts of your bike, and use the following procedures to inspect carbon composite parts.

- Check for scratches, gouges, or other surface problems.
- Check the part for loss of rigidity.
- Check the part for delamination.

If you are the slightest bit unsure... If you have any doubts about the integrity of any part of your Felt Bicycle, do not ride the bicycle and contact either Felt Bicycles directly or your local Felt Bicycles authorized dealer for more information or answers to your questions.

Be very careful when handling carbon fiber parts that are suspected of damage. When a composite part is damaged, there is a possibility that individual fibers may be exposed. Carbon fibers are thinner than a human hair, but quite stiff. If the point of one of these fibers is pressed against your skin, it could pierce your skin like a needle.

**Warning!** A damaged carbon fiber part can fail suddenly, causing serious injury or death. Inspect a carbon fiber bicycle, or parts, for damage frequently. If you suspect a carbon fiber part is damaged, replace the part before riding or take the bike to your dealer for service.

**Warning!** Do not clamp to, modify or otherwise alter the frames Carbon Fiber rear triangle. As well as voiding your warranty it may impair the structural integrity of the frame. Failure to follow this warning may result in serious personal injury or death.

Please visit [feltbicycles.com](http://feltbicycles.com) for the latest technical information on our proprietary technology.

## 7. Cable Management:

The Virtue Nine features a new internal cable routing solution. With two Headtube Cable Plates and two cable exit holes located on the seat tube, the customizable cable management system allows the rider to set up his or her bike ideally.

Figure 11 shows a sample configuration. This sample does not need to be followed exactly, but is shown for guidance. Felt Bicycles ships bicycles with the ideal

configuration. It is advisable to route cables in such a way that the cable and housing is subject to the least amount of crimping, pinching or tight radii as possible to ensure cable performance.

**NOTE** - One hole on each Headtube Cable Plate is smaller (for shifter cables and housing) and one is larger (for height-adjust seatposts).

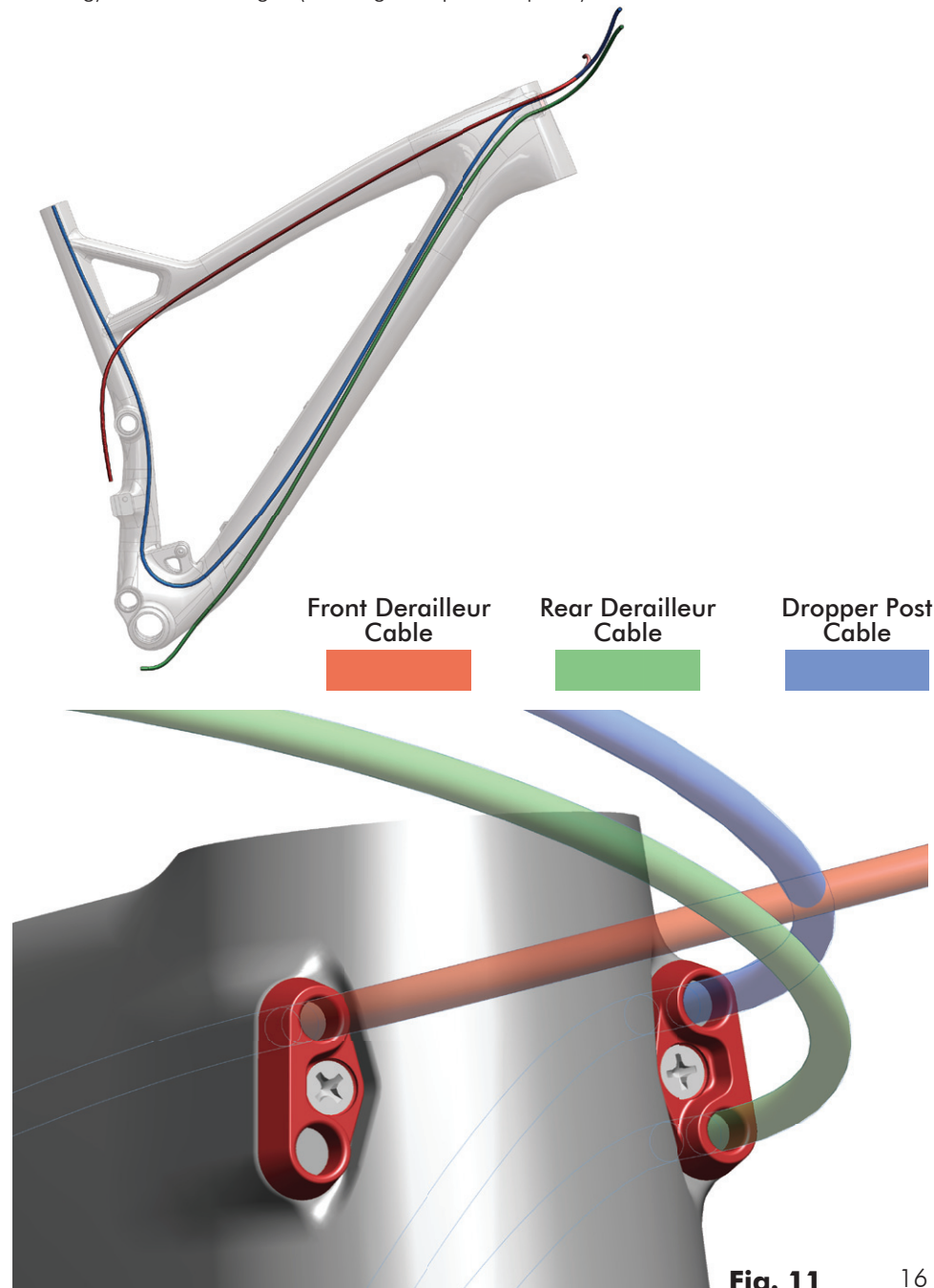


Fig. 11



**FELT**®

*b i c y c l e s*

Felt Racing, LLC  
12 Chrysler  
Irvine, CA 92618

Industriestr. 39  
26188 Edewecht  
Germany

[www.feltbicycles.com](http://www.feltbicycles.com)