

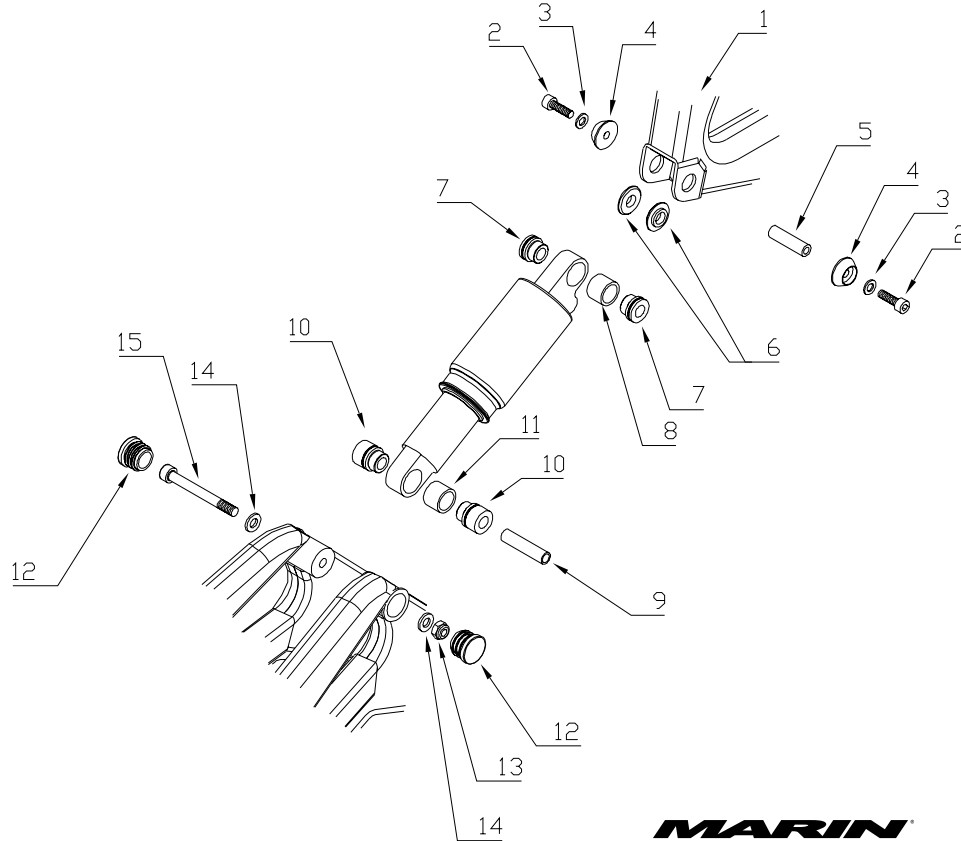
**MARIN**
BIKES CALIFORNIA

FRS QUAD-LINK Service Manual

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1.0: Figure 1, Exploded Diagram Rear Shock Assembly.



1.1: Parts List, Rear Shock Assembly

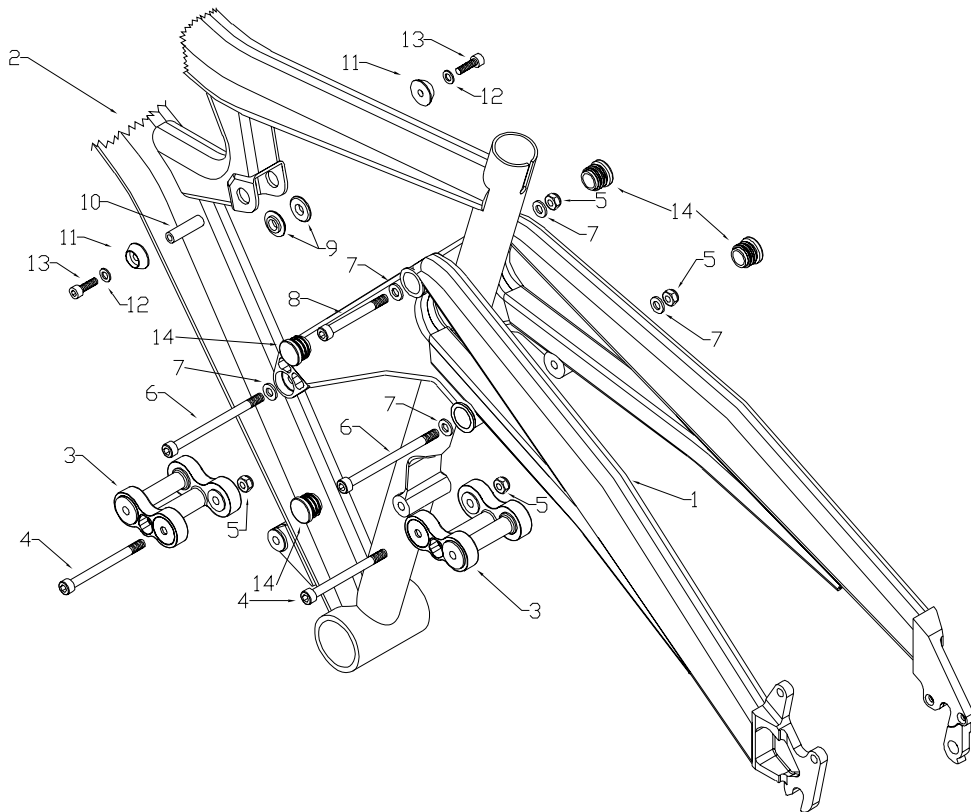
No.	Description	Part Code	Qty
1.	Frame Shock Mount	N/A (Part of Frame)	1
2.	M5 x 16 Socket head cap	97-0000	2
3.	M5 Washer	Supplied with No. 2	2
4.	Collar	97-3035	2
5.	Shaft	97-3036	1
6.	Top Hat bushes	TOPHAT2012	2
7.	FOX bushes (22mm)	FOXBUSH4	2
8.	Glacial Bearing	FOXBUSH1	1
9.	M6 Sleeve		1
10.	FOX bushes (35,5mm)	FOXBUSH5	2
11.	Glacial Bearing	FOXBUSH1	1
12.	Plastic Plug	97-3032	2
13.	M6 Nylock Nut	NYLOCKM6	1
14.	M6 Flat Washer	WASHERM6	1
15.	M6 x 55mm Socket Head Cap	M6X55	1

2.0: Removal of Rear Shock

Tools required: 10mm A/F socket with ratchet or T-Bar drive
5mm A/F Allen Key
4mm A/F Allen Key - 2 off

Support the bike by clamping the seat post in a work stand. Remove the rear wheel. Using the 5mm Allen key to hold the Socket head cap screw (15) and the 10mm A/F socket to loosen nut (13), remove nut (13) and washer (14) then remove the bolt (15) and washer (14) from the other side of the bike. The shock unit should now be disconnected from the swing arm. Next, in order to remove the shock unit from the main frame (1) use the two 4mm Allen keys to loosen the screws (2). Whichever screw loosens first, remove the shaft (5) from the opposite side. The shock unit may now be removed from the bike. Ensure you collect the top hat bushes (6) from the shock mount (1) as you remove the shock.

3.0: Figure 2, Exploded Diagram Rear Suspension Assembly



3.1: Part List, Rear Suspension Assembly: Figure 2

No.	Description	Part Code	Qty
1.	Swing Arm		1
2.	Main Frame		1
3.	Link Assembly		2
4.	M6 Cap Head Bolt	BOLTM6x70-4B	2
5.	Nyloc nut	M6 Nyloc	5
6.	M6 Cap Head Bolt	BOLTM6x85-4B	2
7.	Washer	M6 Washer	6
8.	Screw socket head cap	BOLTM6x55-4B	1
9.	Top hat bush	TOPHAT2012	2
10.	Shaft	CRO3036	1
11.	Collar	97-3035	2
12.	Washer	M5 Washer	2
13.	Screw socket head cap	M5 x 16	2
14.	Plastic Plug	97-3032	4

Not Pictured: Fox shock Air Vanilla Float R 35.5/22 1

4.0: Removal of Swinging Arm. Figure 2

Tools required: 4mm A/F & 5mm A/F Allen keys

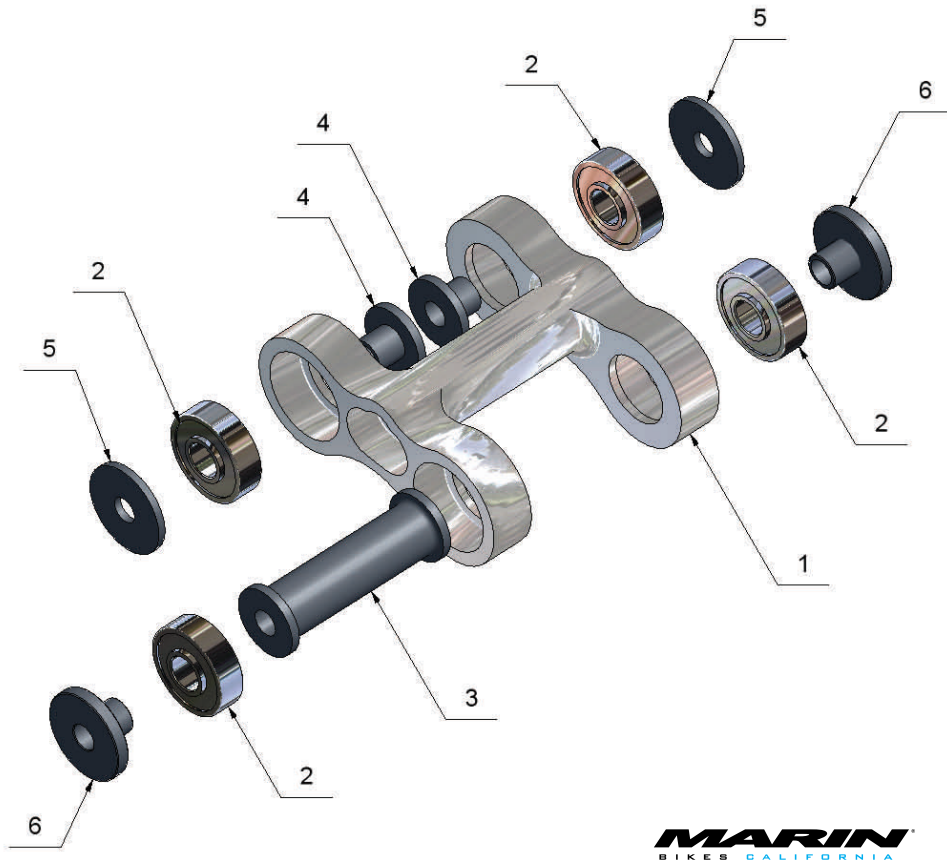
To remove the swinging arm from the bike, follow the procedure to remove the shock unit (Section 2.0). Next remove the rear disc brake calliper from the drop-out, and detach hose from the stops. Do not allow calliper to dangle unsupported by it's hose. Remove rear derailleur mechanism from the swing arm (1). Next remove the two Plastic Plugs (14). Now using the 5mm Allen key to hold the bolt (6) at the front of the swing arm (1) and using the 10mm A/F socket loosen and remove the nut (5) and washer (7), now remove the bolt (6) and washer (7). The swing arm (1) should now be released form the front link. Next use the 5mm Allen key to hold the bolt (6), in the swing arm (1) just behind the seat tube, use the 10mm A/F socket loosen and remove the nut (5) and washer (7), now remove the bolt (6) and washer (7). It should now be possible to remove the Swinging arm (1) by lifting it vertically upwards then forwards away from the main frame (2).

5.0: Removal of Links. Figure 2

**Tools Required: 10mmA/F socket with ratchet or T-Bar drive
5mm A/F Allen Key**

The two link assembly's (3) used on the MARIN QUAD FRS are identical, as are the removal procedures. Having followed the procedures above to remove the shock unit and swinging arm (1), use the 5mm Allen key to hold the bolt (4) then use the 10mm A/F socket to loosen and remove the nut (5), next remove the bolt (4), now remove the link assembly (3) from the main frame(2), taking care not to drop the washers.

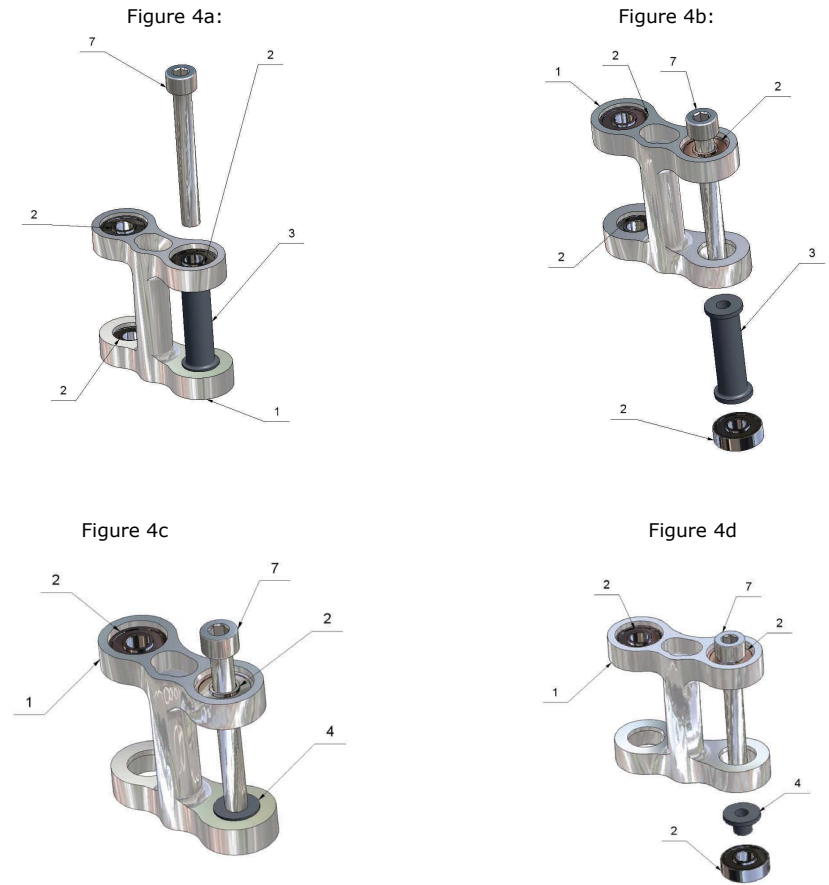
6.0: Figure 3, Exploded Diagram 1 Piece Link Assembly



6.1: Parts List: 1 Piece Link Assembly. Figure 3

No.	Description	Part Code	Qty
1.	1 Piece Link body		1
2.	KP5AX Bearing	KP5A	4
3.	CentreSpacer	Spacer4B	1
4.	Shield washer	Washin4B	2
5.	Shield washer	Washpl4B	2
6.	Shield washer	Washout4B	2

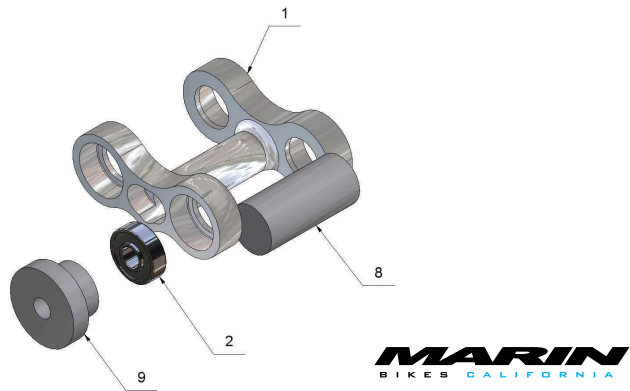
7.0: Figures 4a,4b,4c,4d, Illustration of Bearing Removal



7.1: Extraction of KP5AX Bearings from 1 Piece Link Assembly: Figs 3,4a,4b,4c,4d

Remove all the outer shield washers (4,5,6) and wipe off old grease from the Labyrinth areas. Assemble the link as shown in Fig 4a on top of the jaws of an engineer's vice, supporting the link whilst allowing the KP5AX bearing to be drifted out between the vice jaws. Slide the M8x65mm bolt (7) through the top KP5AX bearing, and drift out the Centre Spacer (3) and KP5AX bearing (2) together as shown in figure 4b. Once the Centre Spacer (3) has been removed from the assembly, the remaining KP5AX bearings can be removed. To remove the remaining 3 KP5AX bearings (2) from the one piece link body (1) assemble the components as illustrated in Figure 4c. Using an inner top hat washer (4) seated in the bearing, slide the M8x65mm bolt (7) through the top KP5AX bearing, and repeat the procedure to drift out the lower KP5AX bearing. Once these bearings have been removed, it should be possible to remove the remaining two KP5AX bearings with a normal size drift tool.

8.0: Figure 5: Diagram of KP5AX Bearing Installation



8.1: Part List. KP5AX Bearing Installation into 1 Piece Link.

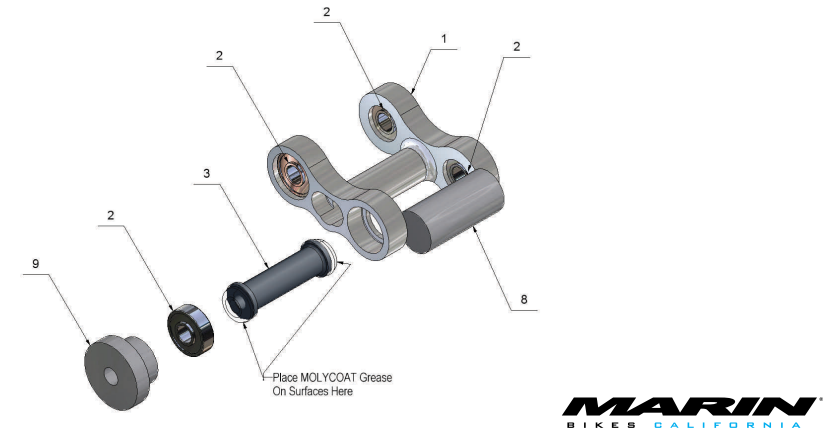
No.	Description	Qty.
1	35mm 1 Piece Link	2
2	KP5AX Bearing	4
3	Centre Spacer	1
8	Link Spacer Tool	1
9	Bearing Insertion Tool	1

8.2: Installation of KP5AX Bearings into One Piece Link

To install the KP5AX (2) bearings into the links, first ensure all bearing surfaces and faces are free from grease old retaining compound and all other contamination. Slide the Link spacer tool (8) in between the inner faces of the One Piece Link (1), as shown in Figure 5.

It is vital the Link Spacer Tool (8) is placed here to prevent bending of the One Piece Link during installation of the Bearings. Apply Loctite 641 on the outside of the KP5AX bearing (2) and on the inside bearing surface of the Link (1). Using the Bearing insertion Tool (9), assemble as shown in figure 5 using an engineers vice with 'soft jaws' to prevent any damage to the Link. Align the components and press the bearing into the link. Ensure the bearing presses in squarely, and is correctly seated in the bottom of it's housing. Repeat until *three* KP5AX bearing are installed. The final bearing will require the Center Spacer to be fitted at the same time as pressing the bearing in.

8.3 Figure 6: Diagram of KP5AX Bearing and Centre Spacer Installation



8.4: Parts List. Centre Spacer and KP5AX Bearing Installation into 1 Piece Link.

No.	Description	Qty.
1	35mm/1 Piece Link	2
2	KP5AX Bearing	4
3	Centre Spacer	1
8	Link Spacer Tool	1
9	Bearing Insertion Tool	1

8.5 Installation of KP5AX Bearing and Centre Spacer

The final bearing will require the Center Spacer (3) to be fitted at the same time as pressing the bearing in. Place the Link Spacer Tool (8) in between the One Piece Link (1) as shown in Figure 6. **It is vital the Link Spacer Tool (8) is placed here to prevent bending of the One Piece Link during installation of the Bearing.**

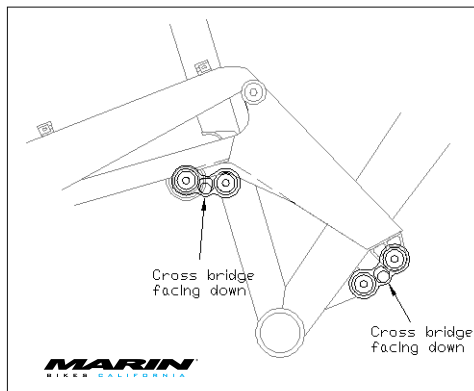
Ensure the KP5AX Bearing (2) and Link (1) surfaces are clean and apply Loctite 641 on the outside of the KP5AX Bearing (2) and the inside bearing surface of the Link (1). Before sliding the Center Spacer (3) into position, it is essential that each end of the Center Spacer (3) has a large amount of MOLYCOAT grease on both ends to create a donut of the grease. This will then spread and fill the Labyrinth on assembly. Pass the Centre Spacer (3) through the Link (1), taking care not to contaminate any bearing surfaces, and locate against the bearing already pressed in. Using an engineers vice with 'soft jaws' to prevent any damage to the Link, align the Bearing Insertion Tool (9) and Bearing (2) to be pressed into the Link (1) correctly. Press the Bearing (2) into the Link (1), ensuring that the Centre Spacer (3) is located in both it's Labyrinth gaps. Remove any excess Molycoat grease from around the area. Once all the KP5AX bearings (2) and Link Centre Spacer (3) have been assembled, the final application of lubricants can be applied before assembly into the Bicycle.

Before re-assembling the Shield Washer Components (4) (5) (6), apply large quantities of Molycoat Grease on top of the KP5AX Bearings (2) seated in the link (1). The grease should completely cover each bearing and be applied on both sides of the bearing as it is assembled into the Link (1). Next assemble the Shield Washer Components (4) (5) (6). If you have applied enough Molycoat grease, grease should spread from under the Shield Washer component as they are positioned. Wipe excess grease away from around the Shield Washer Components.

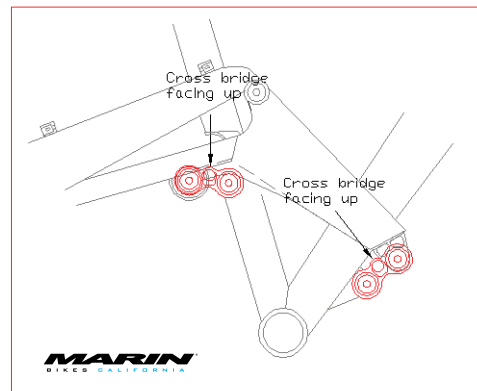
Application of SKF LGAF 3 Compound.

Once the Link has been assembled and correctly greased, SKF LGAF 3 Compound must be applied to all outside faces of the Shield Washer Components (4) (5) (6) that contact the Main Frame and Swinging Arm. It is additionally suggested to apply SKF LGAF 3 compound to the link contact surfaces on the Main Frame and Swinging Arm.

9.0: Figure 7: Installation of Links onto Mainframe.



Correct installation of Links



Incorrect installation of Links

9.1 Fitting of Link Assemblies to Mainframe. Figure 2

Tools Required: 10mm A/F socket with ratchet or T-Bar drive
5mm A/F Allen Key
Torque wrench

The two link assembly's (3) used on the MARIN QUAD FRS are identical, as are the fitting procedures, which is basically the reverse of the removal procedure. Both links are fitted to the bike with the central crosspiece, part of the link, on the bottom of the link assembly, as illustrated in Figure 7. Carefully slide the link assembly (3) onto the main frame making sure the shield washers do not drop out. Insert screw (4), (70mm), through the link and main frame (2) replace nut (5) and torque tighten using the 5mm allen key and torque wrench. Refer to torque settings in section 14.0

10.0: Fitting of Swinging Arm. Figure 2

Tools Required: 10mm A/F socket with ratchet or T-Bar drive
5mm A/F Allen Key
4mm A/F Allen Key – 2 off
Torque wrench

Offer the swing arm (1) into position with the main frame (2). Align the boss at the front of the swing arm (1) with the front link assembly (3), making sure the shield washers have not fallen out. Insert the bolt (6) (85mm), through the washer (7), swing arm (1), main frame (2), swing arm (1) and washer (7), replace nut (5) and tighten with the torque wrench. Next align the rear boss in the swing arm (1) with the rear link assembly (3) making sure the shield washers have not fallen out. Insert the bolt (6) (85mm), through the washer (7), swing arm (1), main frame (2), swing arm (1) and washer (7), replace nut (5) and tighten with the torque wrench. The swing arm (1) should now be fixed to the main frame (2) and should move freely with no sideways movement. For torque settings, refer to section 14.0. Remember to re-fit brake assemblies, and check they are functioning correctly before riding the bike.

11.0: Fitting of Rear Shock. Figure 1

Tools required: 10mm A/F socket with ratchet or T-bar drive x 2
5mm A/F Allen Key
4mm A/F Allen key x 2

Basically this is the reverse of the removal procedure. Ensure that the Top Hat Bushes (9) are installed into the inside of the mainframe mounting point (2). It is best to loosely assemble both ends of the Shock to ensure correct alignment before finally tightening Nut (5) and Bolts (13). Refer to torque settings in section 14.0. Refit plastic plugs (14)

12.0: Rear Suspension Set-up - QUAD-Link FRS - Preload

These bikes are fitted with either a Fox or an X-Fusion rear air shock unit. The air pressure in the shock determines the spring rate.

The correct 'sag' can be found using the sliding 'o' ring fitted to the shaft of the shock piston. Slide the 'o' ring against the shock body. Then gently sit on the bike in your normal riding position. Carefully dismount and measure the distance the 'o' ring has moved away from the shock body.

The optimum distance for the QUAD system is 12mm displacement from the 'o' ring back up to the shock body. If there is less than 12mm fit a shock pump and release air pressure. Conversely if there is greater than 12mm of travel, fit the shock pump and increase air pressure. Repeat the 'sag' test until the 12mm displacement is achieved.

12.1: Rear Suspension Set-up - QUAD-Link FRS - Rebound Damping

When the damper unit is being compressed, this is known as the compression stroke. As the suspension unit recovers from compression back towards its full length, this is called the re-bounce stroke. All the shocks fitted as standard to Marin QUAD-LINK FRS bikes have factory set compression damping, and manually adjustable rebound damping.

Rebound Damping adjustment.

This adjustment fine-tunes the speed at which the rear wheel returns to its normal ride height after hitting a bump. The adjuster is coloured red and is found on the rear damper unit. An arrow marked slower indicates the direction to turn the dial to slow down the rebound speed of the suspension. To demonstrate the effect of this, turn the adjuster to its slowest setting. Press down on the saddle to compress the suspension, then release the load. You will see that the suspension recovers very slowly to its original position.

Repeat the above with the adjuster turned to the fastest setting and you will see the difference immediately the load is released. We recommend the optimum setting is to adjust the re-bounce damping to be as slow as possible, but not so slow that the normal ride height is not recovered. On very rough terrain, if the rear of the bike becomes progressively lower as more bumps are hit then the re-bounce damping is set too slow. On the other hand if the bike feels choppy and not plush then the re-bounce damping is too fast. A bit of trial and error is needed to get the exact setting. Riders may choose to change their settings, while stationary, depending on the terrain they are riding.

13.0: Front Suspension Set-up

When you have set the rear suspension, follow the Owners Manual to fine tune the front forks. It is important to achieve a balance between the front and rear of the bike. In time, you will be able to make these small adjustments required to optimise the way in which the front and rear suspension work together over all types of terrain. In order to achieve maximum traction, we recommend that it is best to run a small amount of initial "sag" on the front forks, in the same way as on the rear.

14.0: Torque Settings

QUAD-LINK REAR SUSPENSION	Nm	lbs.ft
SHOCK REAR PIVOT BOLT (8)	8.0	6.0
SHOCK FRONT MOUNTING BOLTS (13)	5.5	4.0
SWING ARM - TO - LINK THROUGH BOLT M6x85mm (6)	8.0	6.0
LINK - TO - MAIN FRAME THROUGH BOLT M6x70mm (4)	8.0	6.0

Torque explained: If no suitable Torque Wrench is available a Torque of 6 lbf.ft can be obtained by applying a force of 6lb, with a Spring Balance, to the end of a 1 Foot long wrench.

15.0: Notes