

Giant NRS™

Model Year

2004

Owners Manual

July 2003.



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1. Introduction.

PROFESSIONAL CROSS COUNTRY BIKE:

- Unique 4 bar linkage design
- NRS™ (No Resonance System) suspension with “zero-SAG” set-up
- Also possible to set up with “SAG”
- Sealed bearings on all pivots
- Rising rate suspension + “zero-SAG” result in “no bobbing” and “no power loss”
- Air shock with adjustable rebound damping
- Sensitive rear shock works even on the smallest bumps
- Rear wheel travel: approx. 75~95mm. (3~3¾ inches)
- Front wheel travel: 80 mm. (more than 3 inches).

Giant's products are designed to provide years of recreation and enjoyment.

The GIANT NRS™ bikes have been designed as Cross Country racing bikes, but are suitable for allround use as well.

However, in order to fully understand all the bicycle features, you must read this bicycle manual, instructions for the suspension fork and other components, provided by Giant and parts suppliers. If you do not understand any information in the manuals or if you misplace any of them, please contact your authorised Giant dealer immediately.

Please take the time to read and understand this material to help limit the possibility of serious injury.

ALWAYS read and follow all instructions in this manual.

It is very important that your dealer carries out any repair or maintenance, which is not described in this manual.

2. Sizing.

The actual frame measurements and geometries are listed below.

See figure 1.

Size	S - 16½"	M - 18½"	L - 20½"	XL - 22½"
A. Top Tube [mm.] (measured horizontally)	575	590	613	630
B. Seat Tube [mm.]	420	470	520	570
C. Seat Tube Angle	72 degrees			
D. Head Tube Angle	71 degrees			
E. B.B. Drop [mm.]	22			
F. Chain stays [mm.]	425			
G. Fork Rake [mm.]	38			
H. Trail [mm.]	76.5			
BB - front hub (c-c)	616	632	656	674
I. Wheel Base [mm.]	1040	1056	1080	1098
Rear Travel	75~95mm (3~3¾ inches)			

3. Exploded view.

Please see figure 2.

NR.	DESCRIPTION	REMARKS	Q'TY PER BIKE
1	Front triangle		1
2	Chain stays		1
3	Seat stays		1
4	Lower shock mount	Set	1
	4-1 Fixing bolt	1 pc. per set	
	4-2 Washer	2 pcs per set (same as 6-5 and 8-2)	
	4-3 Nut	1 pc. per set	
5	Fixing bolt upper shock mount		1
6	Pivot parts set	Seat tube	1
	6-1 Fixing nut	1 pc. per set	
	6-2 Bearing	2 pcs per set	
	6-3 Aluminium bushing, 10.5mm	2 pcs per set	
	6-4 Aluminium bushing, 28.3mm	1 pc. per set	
	6-5 Washer	1 pc. per set (same as 4-2 and 8-2)	
	6-6 Fixing bolt	1 pc. per set (same as 8-1)	
7	Pivot parts set	Seat stays - linkage plates	2
	7-1 Fixing bolt	1 pc. per set	
	7-2 Teflon™ bushing	1 pc. per set (note 1)	
	7-3 Bearing	1 pc. per set	
	7-4 Spacer	1 pc. per set	
8	Pivot parts set	Chain stays - bottom bracket	1
	8-1 Fixing bolt	1 pc. per set (same as 6-6)	
	8-2 Washer	1 pc. per set (same as 4-2 and 6-5)	
	8-3 Bearing	2 pcs per set	
	8-4 Spacer	2 pcs per set	
	8-5 Fixing nut	1 pc. per set	
9	Pivot parts set	Dropouts - chain stays	2
	9-1 Fixing bolt	1 pc. per set	
	9-2 Teflon™ washer	2 pcs per set	
	9-3 Aluminium spacer	2 pcs per set	
	9-4 Bearing	1 pc. per set	
10	Rear shock	Incl. hardware	1
11	Linkage plates	Set LH and RH	1
12	Bolt M4	(note 2)	2
13	Replaceable dropout	Incl. bolt and nut	1

Note 1. Part # 7-2 (Teflon™ bushing) only on frames with composite linkage plates (NRS™ Composite).

Note 2. Part # 12 (bolt M4) only on frames with aluminium linkage plates (NRS™-1, 2 and 3 and frame set NRS™).

4. Rear suspension.

The rear suspension for Giant NRS™ bicycles and frames is provided by Giant NRS™ Air shocks. For a description of the NRS™ Air shock, refer to section 4-2: “Bikes equipped with a Giant NRS™ Air shock”.

WARNING:

Improper adjustment of rear suspension shock can result in unstable conditions or loss of control.

4-1 NRS™ rear suspension system.

NRS™ (No Resonance System) bikes are equipped with dedicated air-type rear shocks.

These rear shocks have separated “positive” and “negative” springs.

The positive (air) spring’s main function is to absorb the shock impact.

The negative (coil) spring (which is much smaller) makes the positive spring function smoothly and prevents a harsh top out feeling when the shock returns to its original position.

The air chamber has a valve to change the air pressure with a shock pump. By inflating the air chamber the NRS™ system can be set up in such a way that maximum efficiency, comfort and control easily can be obtained.

Bikes with NRS™ system come with a shock pump with gauge free of charge!

Please use this pump to inflate the rear shock!

Air pressure has to be checked before every ride, slight air loss might occur over a few days standing.

4-2 Bikes equipped with a Giant NRS™ Air shock.

Figure 3 shows the Giant NRS™ Air shock:

A = Rebound damping adjust knob

B = Air valve

C = Air valve cap

D = Can

E = Stop

F = O-ring

The Giant NRS™ Air shocks have an air chamber with a valve (B) to set “SAG” or “no SAG”, and an external rebound damping adjust knob (A) to control an internal piston that regulates the extension or rebound damping of the shock.

There are no serviceable parts inside these Giant shock units. For maintenance, repair or service, return only to an authorised Giant dealer (or call the Giant distributor in your country) once a year or more often if the bike is used in extreme conditions.

This service is not necessarily free of charge!

WARNINGS:

- **All service and maintenance of the rear shocks should only be performed with proper tools by an authorised Giant dealer or by the Giant distributor in your country.**
- **Do not disassemble or otherwise modify the shock unit or attachments.**
Doing so will not only void all warranties but can lead to serious injury or death.
There's high pressurised gas inside the shock.
Also, don't place it into the fire.
- **Don't turn the rebound damping adjust knob with pliers or another tool.**
Only use your fingers to turn the knob to adjust the rebound damping.

4-3 Selecting rear travel.

NRSTTM bikes have 2 possibilities to mount the rear shock unit.

These settings offer the rider the choice of 2 different rear suspension characteristics, depending on personal preference, how fast or slow the course is and how high or low the shock impacts are.

Position "1" results in a 3" maximum rear wheel travel, with a high rebound speed.

Position "2" results in a 3¾" maximum rear wheel travel and a lower rebound speed.

The ideal setting cannot be prescribed by Giant, but here are some tips:

Position "1" with 3" travel may be an option for fast races or courses with relatively low shock impact (smooth terrain). Because in this setting the rear shock unit doesn't need such a high "positive" air pressure, it's also recommended for heavier riders, say 80 kg. or more.

Position "2" with 3¾" travel may be more suitable for slower and very technical races or courses with relatively high shock impact (rough terrain). In this position the rear shock unit needs a higher "positive" air pressure, so it's less suitable for heavier riders.

How to change the position of the rear shock:

1. Use a 5 mm. Allen-key to remove the bolt that holds the upper end of the shock to the linkage plates.
Take note of the position of each part when removing, to insure proper re-assembly.
2. Pivot the top of the shock towards the desired shock mounting holes in the linkage plates.
See figure 4 which holes to use for position "1" or position "2".

3. Re-install all parts in reversed order.

The threads of fixing bolt should be cleaned and re-set using Loctite™ Primer (#7649) and Loctite™ blue Removable Threadlock (#242) or similar material.

Recommended tightening torque of the fixing bolt: 12~15 Nm.

WARNING:

Improper (dis)assembly may result in damage to the bicycle or in an accident which can cause serious injury or death.

4-4 Selecting air pressure, “zero-SAG” adjustment.

General.

How to set up the rear shock correctly with “zero-SAG”, in order to maximise the efficiency, comfort & control of an NRS™ bike.

Usually, the rear shock of a Dual Suspension is partly compressed if the rider sits on the bike (SAG). NRS™ is based on the principle of “zero-SAG”. That means that the rear shock is not compressed when the rider sits on the bike and rides on a nicely paved road. It will only compress when the bike meets an obstacle.

Simplified description.

1. Check the following table to find the correct air pressure, depending on your weight:

Note: for sure, the pressure in the table is too low, but you have to start with this value to find the exact “zero-SAG” setting.

2. Inflate the air chamber until the correct pressure has been reached.
3. Test ride your bike on the road. Do some accelerating and sprinting.
4. Does the rear suspension “work / bob”, is the rear shock compressed ?
If yes, this means there is still some “SAG”, and the air pressure in the air chamber is still too low.
5. Increase the pressure of the positive spring in repetitive steps of 5 or 10 psi. following the points 2, 3 and 4 until “zero-SAG” and “no bobbing” is reached.

Entire description.

Do as follows:

1. Try the air pump on the valve and make sure the air pressure opens the valve, air goes into the air chamber and does not stay in the pump hose.
2. Try to find out your exact body weight including cycling gear (clothing, helmet, shoes, cycling bag.....).
3. Check the following table to find the correct air pressure, depending on the position of the rear shock and your weight:

NRS™ bikes with Giant NRS™ Air shock		Position "2" 3¾" travel	Position "1" 3" travel
	Body Weight	Air pressure	Air pressure
	50 kg. / 110 lbs.	125 psi	60 psi
	55 kg. / 121 lbs.	130 psi	70 psi
	60 kg. / 132 lbs.	135 psi	80 psi
	65 kg. / 143 lbs.	140 psi	90 psi
	70 kg. / 154 lbs.	145 psi	100 psi
	75 kg. / 165 lbs.	150 psi	110 psi
	80 kg. / 176 lbs.	155 psi	120 psi
	85 kg. / 187 lbs.	160 psi	130 psi
	90 kg. / 198 lbs.	165 psi	140 psi
	95 kg. / 209 lbs.	170 psi	150 psi
	100 kg. / 220 lbs.	175 psi	160 psi

4. Inflate the air chamber until the correct pressure has been reached.
5. This shock pressure enables you to set up the shock 95% correctly. It is impossible to take into consideration deviations in the air pump gauge and the rear shock. Therefore we suggest making the following simple steps, which offer two more ways to achieve the 100% correct setting.
The finishing touch to get to the "zero-SAG" setting will give the optimal efficiency and the best performance.
It is important to understand that the shock should be delicately set on the edge of "zero-SAG" and not with too high air pressure. Therefore this procedure goes from a little bit too low air pressure to just enough air pressure to achieve "zero-SAG".
6. Put the bike against a wall and make sure there is a zip tie or O-ring around the rear shock piston.
7. Sit on the bike (during stand still). Pull the zip tie or O-ring against the stop of the rear shock piston. Sit still on the saddle, without bobbing. Make sure you sit on the bike like you normally would. Push gently one of the pedals, like you would do during real riding (while keeping the front wheel locked with the front brake).
8. Shift your body weight gently from the saddle to the front fork and try to dismount without causing too much movement in the bike.

9. Check the or O-ring. Did it slide down on the piston? If yes, this means there is still some "SAG".
- REMEMBER: FOR MAXIMUM EFFICIENCY THE NRS™ SYSTEM SHOULD ALWAYS BE SET UP WITH "ZERO-SAG" !!!**
10. Increase the pressure of the positive spring in repetitive steps of 5 or 10 psi. following the points 7, 8 and 9 until "zero-SAG" is reached.
11. It is essential to set up the NRS™ system with "zero-SAG". Here's the final check: ride the bike with NRS™ system with a relatively high RPM on a nicely paved road. In case the bike tends to "bob" with small motions, then increase the positive spring by another 10 psi. Now try again and the result should be, that the bike does not "bob" anymore, whether sitting on the saddle or climbing or sprinting out of the saddle.
12. Note: the air pump which is supplied free of charge with the NRS™ bike is equipped with an escape valve (the black knob below the gauge) to de-pressurise the shock when the pressure is too high.
13. Note: the shock setting should be checked regularly (at least every 2 weeks). Of course the simplest way to check is the asphalt paved road test with high RPM (see point no. 11).
14. Note: by putting the pump on the shock, the valve is opened and always some air pressure will be lost (between 10 and 15 psi.). By taking the air pump from the valve no air pressure will be lost. A small amount of air can be heard escaping, this is between the valve and the gauge.
15. Note: when the shock is set up for the first time and has to be inflated from 0 psi., the temperature in the air chamber will rapidly rise. Afterwards the temperature inside will drop slowly. Together with the drop in temperature some air pressure will be lost. Therefore the pressure has to be checked again after approx. 15 minutes.
16. Note: air shocks are sensitive to big temperature changes. Especially in winter when the bike is taken outside, the air pressure setting has to be checked again outside.
17. Once you understand the routine of correctly setting up the NRS™ suspension system, and have experienced what the bike can do for you (MORE POWER), you can then try to slightly modify the air shock setting to your own personal needs.
- Always maintain the "ZERO-SAG" principle.

Have fun!

4-5 Selecting air pressure, adjustment with “SAG”.

Of course, an NRS™ bike can also be ridden with “SAG”. Some riders prefer this softer, more comfortable setting of the rear suspension system. Especially in not-competitive events, during technical sections and in very rough terrain.

The air pressure you run in the shock varies depending on weight and riding style.

The valve on the shock is for air pressure. Adjusting air pressure determines the spring rate or stiffness of the shock. The more air you put in, the firmer your shock will get.

By using an air pump, you may change the air pressure in the air chamber.

Goal: find the air pressure that allows you to use the maximum travel available. Ideally you want the shock to occasionally bottom out.

“SAG” is the amount of shock travel that is used as the rider sits stationary on the bike and allows the bicycle to perform as it was designed to. Typically, SAG is 25 - 30 % of all available travel.

To properly set the SAG, you will need measuring tape and/or calliper.

- Step 1. Prepare the bicycle. Set the saddle to the correct height for your riding style.
Attach all accessories, bags, water bottles, etc. that you would normally ride with.
- Step 2. Prepare yourself. Dress as you would for a normal ride, including helmet, cycling bag, etc.
- Step 3. Slide the rubber O-ring (F) of the shock piston against the stop (E).
See figure 3.
- Step 4. Remove the cap from the valve and push the small pin (core) inside the valve to depressurise the rear shock's air chamber.
- Step 5. Push on the saddle as hard as you can, so the full travel of the rear suspension is used.
After the rear suspension has completely returned to its “rest” position (pull the saddle upwards and hold the rear end of the frame, or just inflate the air chamber to approx. 150 psi.), measure the distance “L” between the stop (E) and the rubber O-ring (F).
This should be approx. 35 mm.
- Step 6. Check the table of section 4-4: “Selecting air pressure, zero-SAG adjustment”, to find the correct air pressure, depending on your weight (just as an indication).
- Step 7. Adjust the pressure in the air chamber until the correct pressure has been reached (see section 4-6: “Air pressure setting”).

- Step 8. Slide the rubber O-ring (F) of the shock piston against the stop (E) again.
- Step 9. Sit on your bicycle with your feet on the pedals in your normal riding position, without causing too much movement in the bike. Lean against a wall or ask someone else to help.
- Step 10. Come off from your bike, again without causing too much movement in the bike.
Check the rear shock and you will see that the rubber O-ring (F) has been moved along the piston again.
Measure the distance between the stop (E) and the O-ring (F).
This distance should be approx. 25 - 30 % of the distance "L" measured during step 5 (so, between 8 and 11 mm.).
Adjust the air pressure and repeat steps 7 - 10 until you have reached this.

4-6 Air pressure setting.

1. Locate the air valve "B" on the rear shock (figure 3) and remove the air valve cap "C".
2. Connect the shock pump (figure 5) with the rear shock by rotating the pump head (a) into the valve. Don't over tighten!
3. Inflate the shock to the desired pressure.
WARNING: the air pressure should not exceed 300 psi !
4. If the air pressure is over the desired value, reduce the pressure by pushing the micro adjust button (b).
5. After inflating unscrew the head of the pump from the valve. By taking the air pump from the valve no air pressure will be lost. A small amount of air can be heard escaping, this is between the valve and the gauge (c).
6. Reinstall the valve cap "C" .

4-7 Damping adjustment.

The rear shock includes a rebound damping adjust knob "A" (see figure 3).

Rebound adjustment:

The rebound controls the extension or return of the shock. The shock's rebound is quickest when the adjust knob is in the full anti-clockwise position. Rebound is slowest when the adjust knob is in the full clockwise position.

To optimise the rebound, do a washboard test. The rebound is just right when the wheel follows each bump and feels smooth throughout. The first bump should be as smooth as the last bump.

Symptoms of too much rebound damping:

Slow shock return, where the shock feels good through the first few bumps and gets harder as you continue, means there is too much rebound damping. In addition, while braking, the rear wheel will tend to skip over the bumps ("pack up"). To adjust it for more consistency and better braking, turn the rebound knob a half turn anti-clockwise and test it again.

Symptoms of too little rebound damping:

Too little rebound damping is when the shock returns too fast and the bike seems to want to "buck you off" or the rear wheel skips easily over bumps. Turn the rebound knob a half turn clockwise to slow the rebound down for more consistency and better braking through the bumps.

4-8 Rear suspension tuning.

Giant NRS™ dual suspension bicycles are equipped with front and rear suspension that offer multiple adjustment and tuneability. Adjustment of your suspension is subjective and cannot be fully prescribed by Giant. If you need help, contact your local authorised Giant dealer.

Different riders require different performance characteristics from their suspension.

- A. Heavier or more aggressive riders need higher air pressure and heavier (slower) damping.
- B. Lighter riders need lower air pressure and lighter damping.

For service in your country please contact a local authorised Giant dealer or the Giant importer in your country.

4-9 Removing the rear shock assembly or pivots.

It is necessary to periodically check the rear shock unit and the suspensions' pivot points for damage or wear.

The Giant rear shock unit should be returned to an authorised Giant dealer or to the Giant distributor in your country to inspect and repair.

(Note: this is not covered under the terms of the warranty).

WARNING:

Do not try to disassemble or to replace the rear shock or pivots by yourself!

Improper (dis)assembly may result in damage to the bicycle or in an accident which can cause serious injury or death. Only an authorised Giant dealer should disassemble the rear shock or pivots.

4-10 Shock pump.

To increase or control the air pressure of the shock, a special air pump is needed.

A pump is supplied with each NRS™ bike / frame set.

See figure 5: the pump on the picture may be a different one from the pump that comes with the bikes.

a = pump head

b = micro adjust knob

c = gauge.

5. Tightening torque.

The bolts used for the rear suspension (rear shock and pivots) are high-grade products and have been tightened in the factory with specific torque. If it is necessary to remove or tighten the bolts, extreme care should be taken when re-tightening them.

All bolts should be cleaned and re-set using Loctite™ primer (#7649) and Loctite™ blue Removable Threadlock (#242).

For the location and tightening torque of all bolts please refer to figure 6.

Location		Tools needed	Recommended tightening torque
1	Main pivot (BB - chain stays)	5 mm. Allen-keys	12~15 Nm.
2	Chain stays - seat stays pivots	5 mm. Allen-key	12~15 Nm.
3	Linkage plate - seat stays pivots	5 mm. Allen-key	12~15 Nm.
4	Linkage plate bearing, M4 bolt (see note)	3 mm. Allen-key	2~2.5 Nm.
5	Seat tube - linkage plates pivot	5 mm. Allen-keys	12~15 Nm.
6	Upper shock mount	5 mm. Allen-key	12~15 Nm.
7	Lower shock mount	5 mm. Allen-key and 10 mm. wrench	10~12 Nm.

Note: only on frames with aluminium linkage plates (NRS™-1, 2 and 3 and frame set NRS™).

6. Cleaning and maintenance.

Proper maintenance of a Giant NRS™ dual suspension bicycle is important to insure years of trouble free safe riding and enjoyment.

We recommend taking this bike to your authorised Giant dealer for periodic service and inspection of suspension systems. Parts such as seals, elastomer bumpers and bearings can be adversely affected by use, dirt and ultraviolet radiation. The bike should be returned to an authorised Giant dealer for rear shock inspection and adjustment once a year or more often if the bike is used in extreme conditions. (Note: this is not covered under the terms of the warranty and is not necessarily free of charge!).

DO NOT use high-pressure water or air hoses to clean bike. This can force dirt into areas that may cause damage.

DO NOT lubricate any of the pivot points. These are high quality self lubricating Teflon™ or similar surfaced pivots.

See also the manuals of the suppliers of the suspension fork and other parts that come with this NRS™ bike.

Bicycles and bicycle components are more complex than ever before. It is very important that your dealer carries out any repair or maintenance, which is not described in this manual. Consult your dealer for help in determining your maintenance needs.

How much of your bike's service and maintenance you can do depends on your skill and experience, and whether you have the special tools required. If you want to learn how to work on your bicycle ask your dealer for advice on a suitable book and local bicycle repair courses.

Warning.

Many bicycle service and repair tasks require special knowledge and tools. Do not begin any adjustments or service on your bicycle if you have the slightest doubt about your ability to properly complete them. Improper adjustment or service may result in damage to the bicycle or in an accident which can cause serious injury or death.

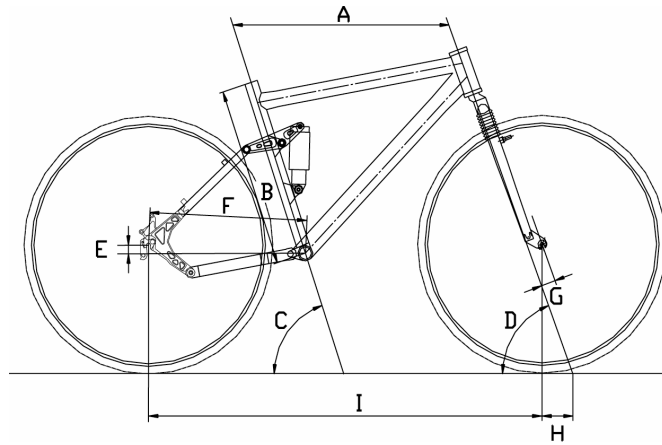


Fig. / Abb. / Rys. 1.

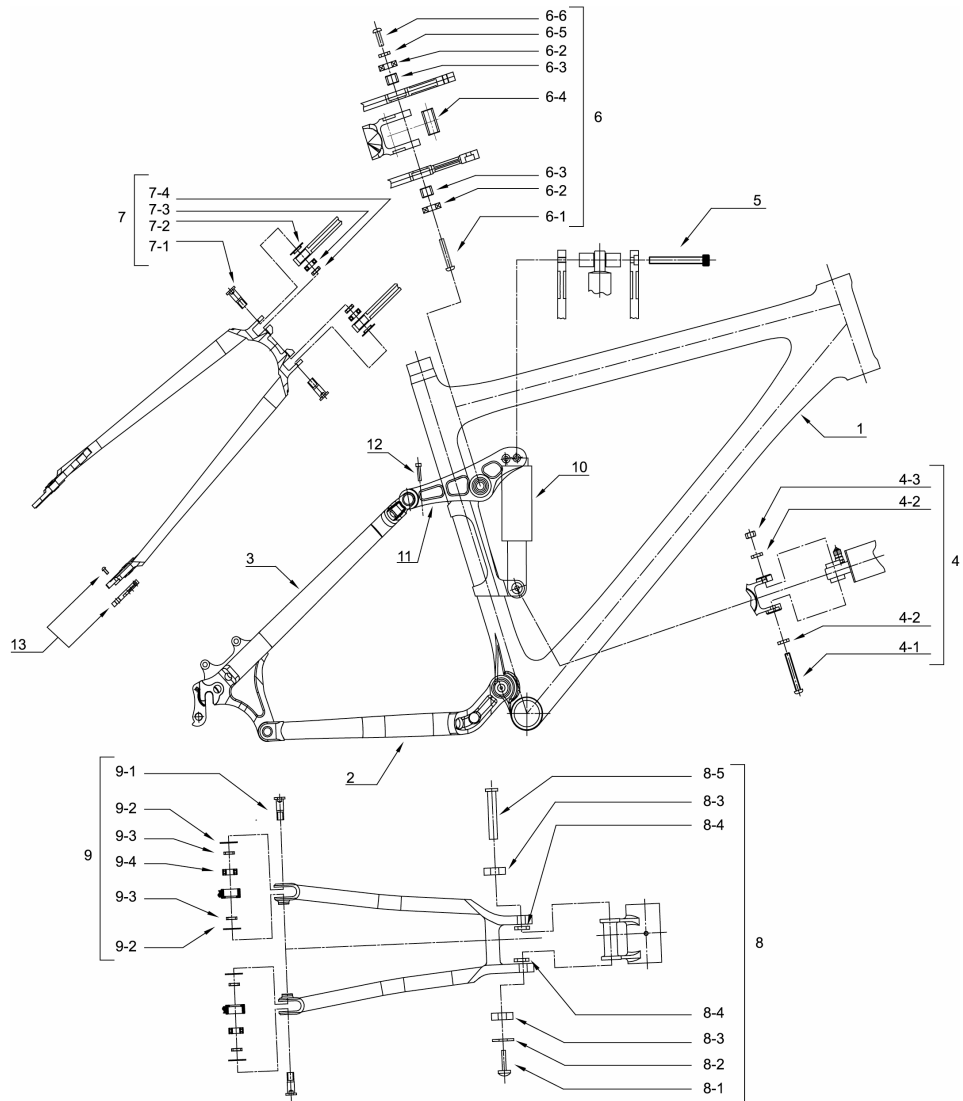
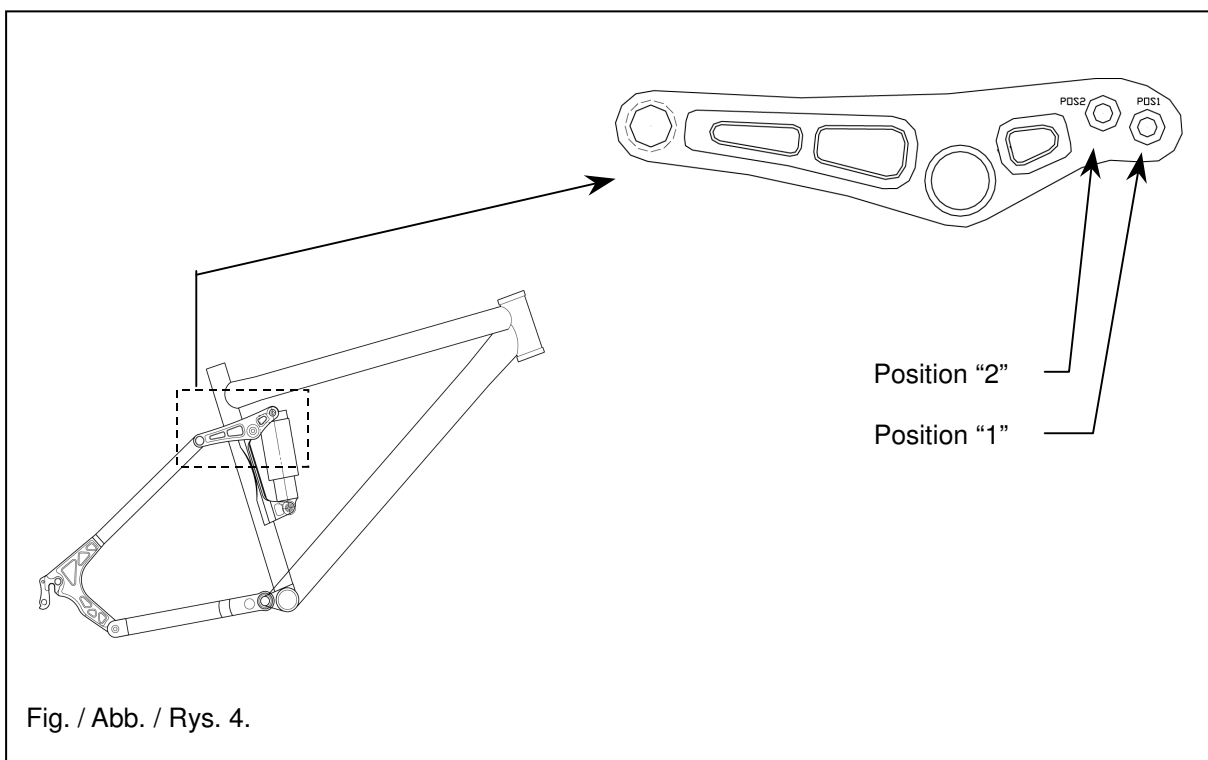
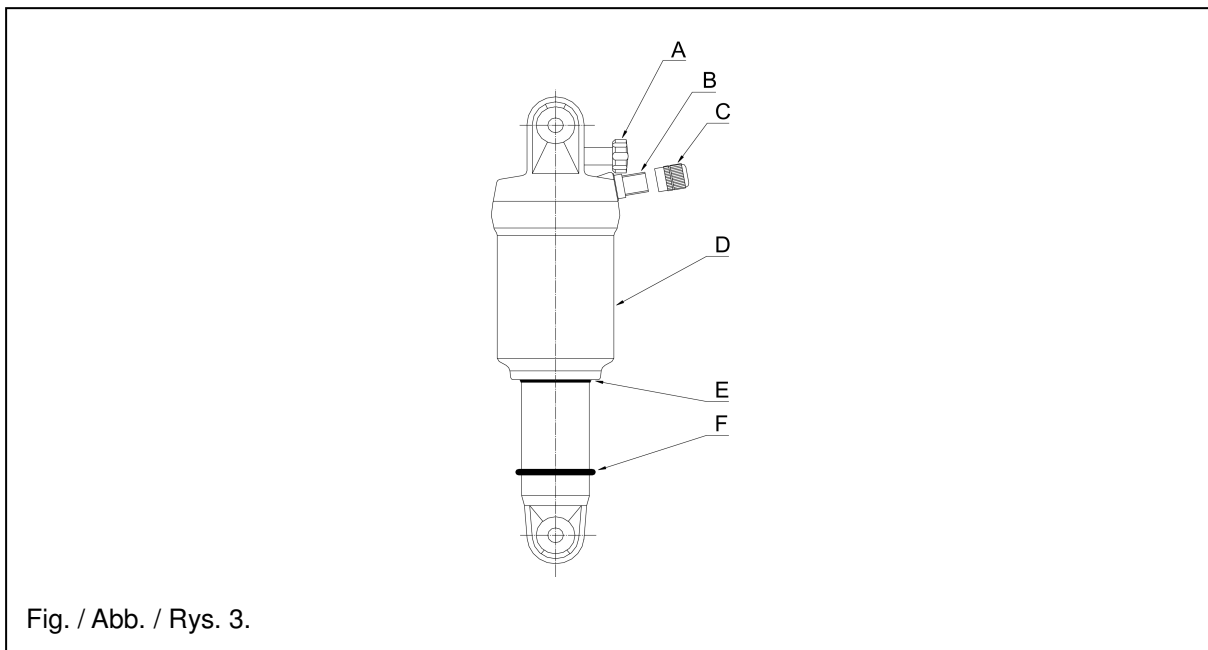


Fig. / Abb. / Rys. 2.



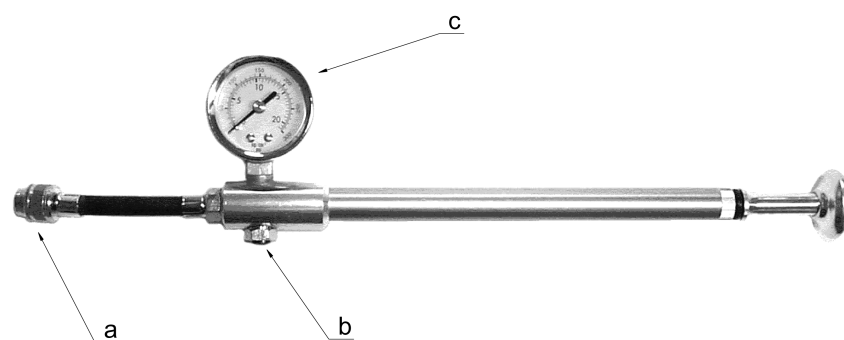


Fig. / Abb. / Rys. 5.

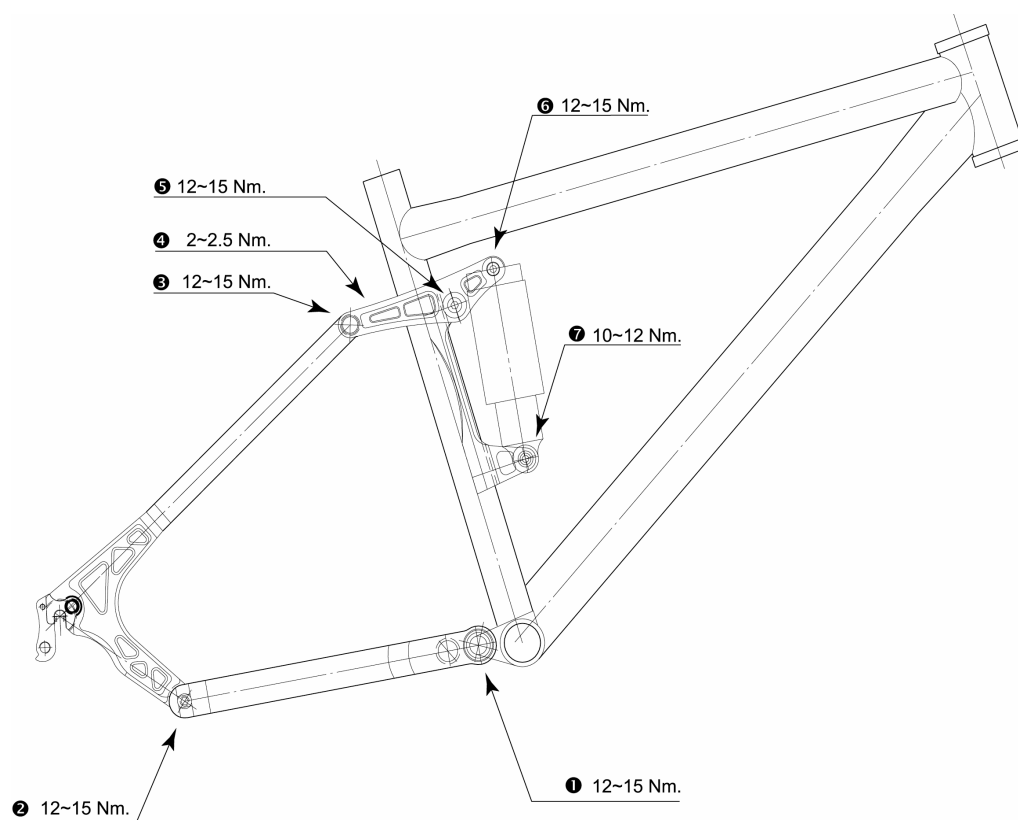


Fig. / Abb. / Rys. 6.