

Changelog

Date	Version	Change
1.05.2020	0.1	Initial version of this manual, only RD07A
19.08.2020	0.2	RD03 update

If you have any question, you found an error or you want to add something
→ send us an email or contact us by FB to make this instruction better.

Check for the newest version at:

<https://dmmotoadventures.com/shock-absorber-service/>

Introduction

Hi!

We are Dawid and Marta from DM Moto Adventures :)

Last time we were working on AT rebuild kit as a small side project. It looks like this shock absorber is fully rebuilt now and works fine, so we can show you how to rebuild this shock and offer you a rebuild kit.

With this instruction and the rebuild kit, repairing of the shock should be much cheaper than sending it to a professional service. You can also learn how to service shock in your motorcycle - it is always nice too :)

You can use our new reservoir cap like an original one or move the bladder to the opposite side. Thanks to this the oil change in the future will be much easier. Reservoir modification is needed - at least you need to add the gas valve to the cover.

You can also replace the piston rod to make the shock absorber longer. Thanks to this you can rise the bike up to 6cm (2.4in).

In my case oil seal was working for ~25kkm (15k miles), then I sold the bike. 4 years passed since this shock absorber rebuild and it is still working fine! I repaired it without any special tools or knowledge (it was my first shock absorber on the bench).

Just be patient, think twice before every steep and it will be fine!

This manual is also available at our YouTube channel: <https://www.youtube.com/c/DawidMartasMotoAdventures>

Part1: Rear shock disassembly: <https://youtu.be/Iuo3R10weyo>

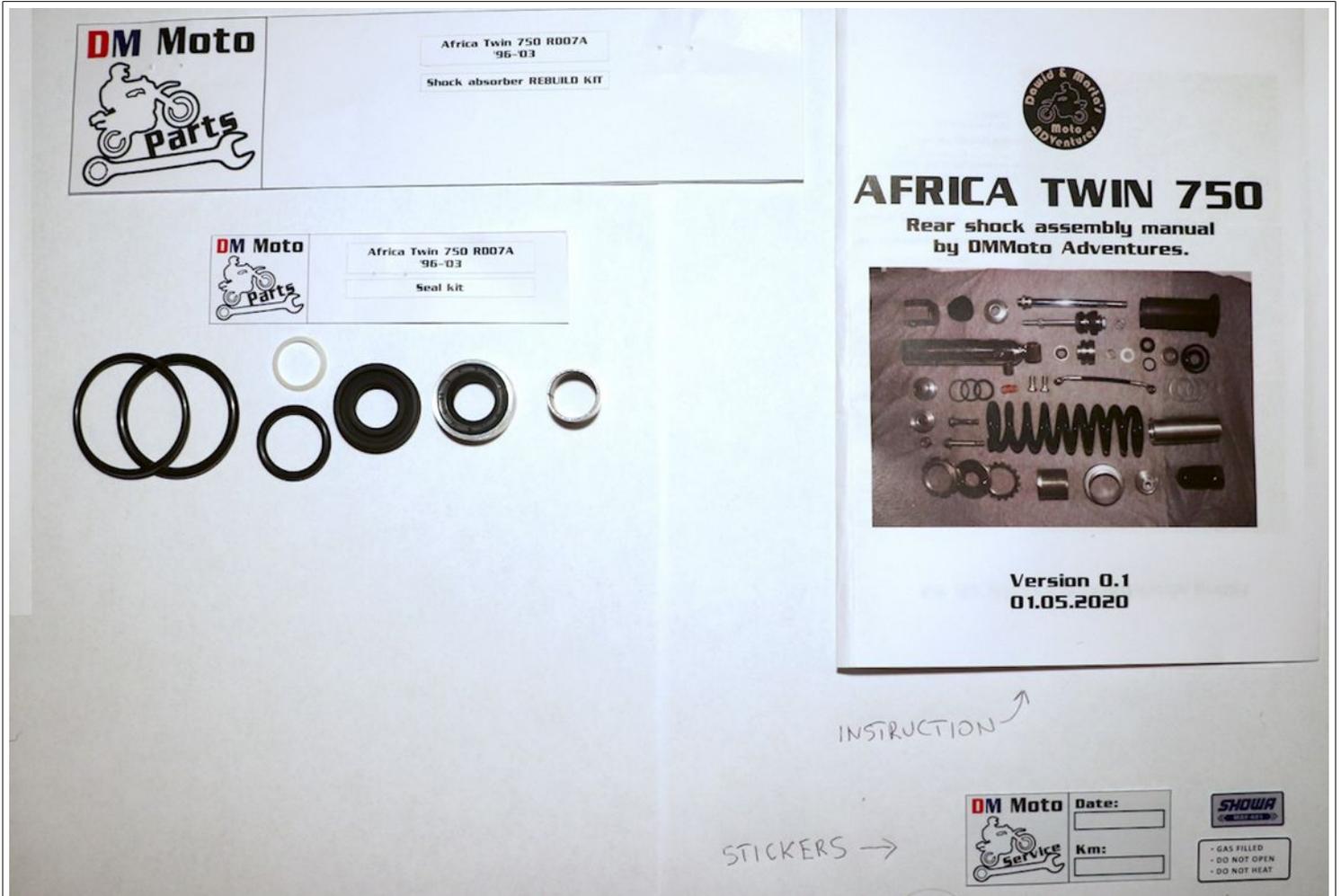
Part 2: What's inside, new parts, tuning, oil change methods: <https://youtu.be/fmiq-SgIHMk>

Part 3: Rear shock assembly: <https://youtu.be/vu0mbvVnpAk>

Parts

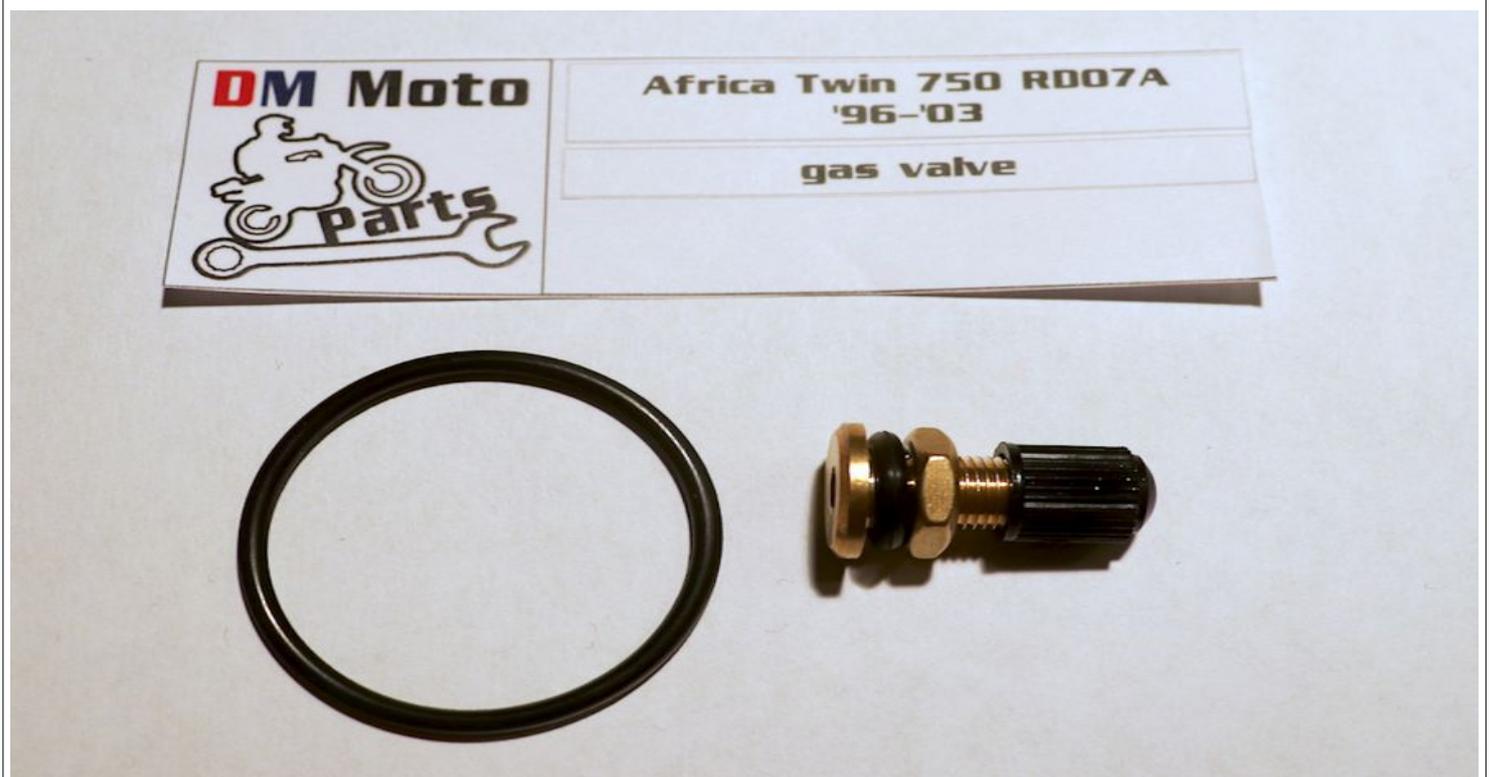
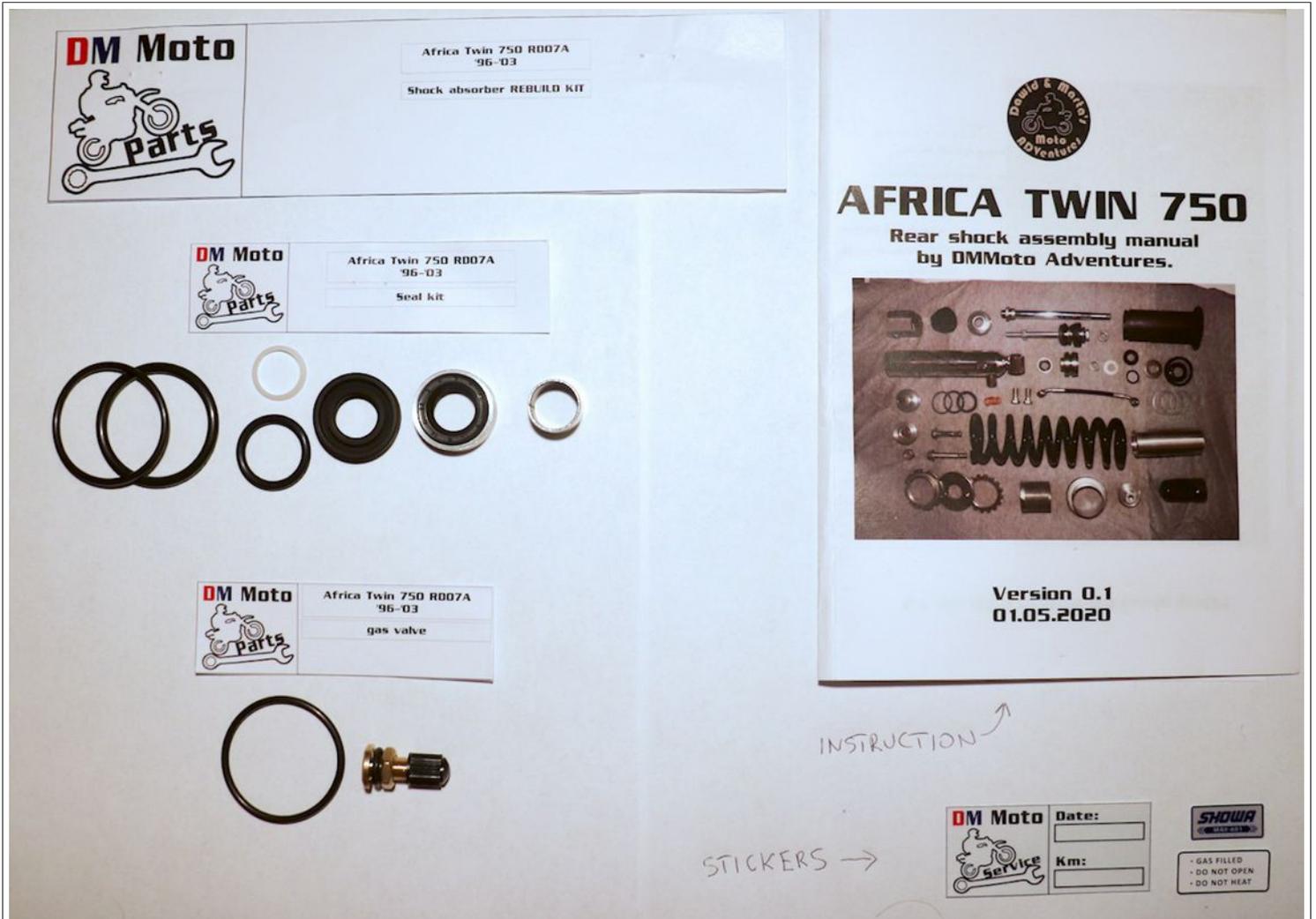
Repair kit #1

basic repair kit (main oil seal, slide bushing, dust seal with adapter, seal head o-ring, reservoir cap o-ring)



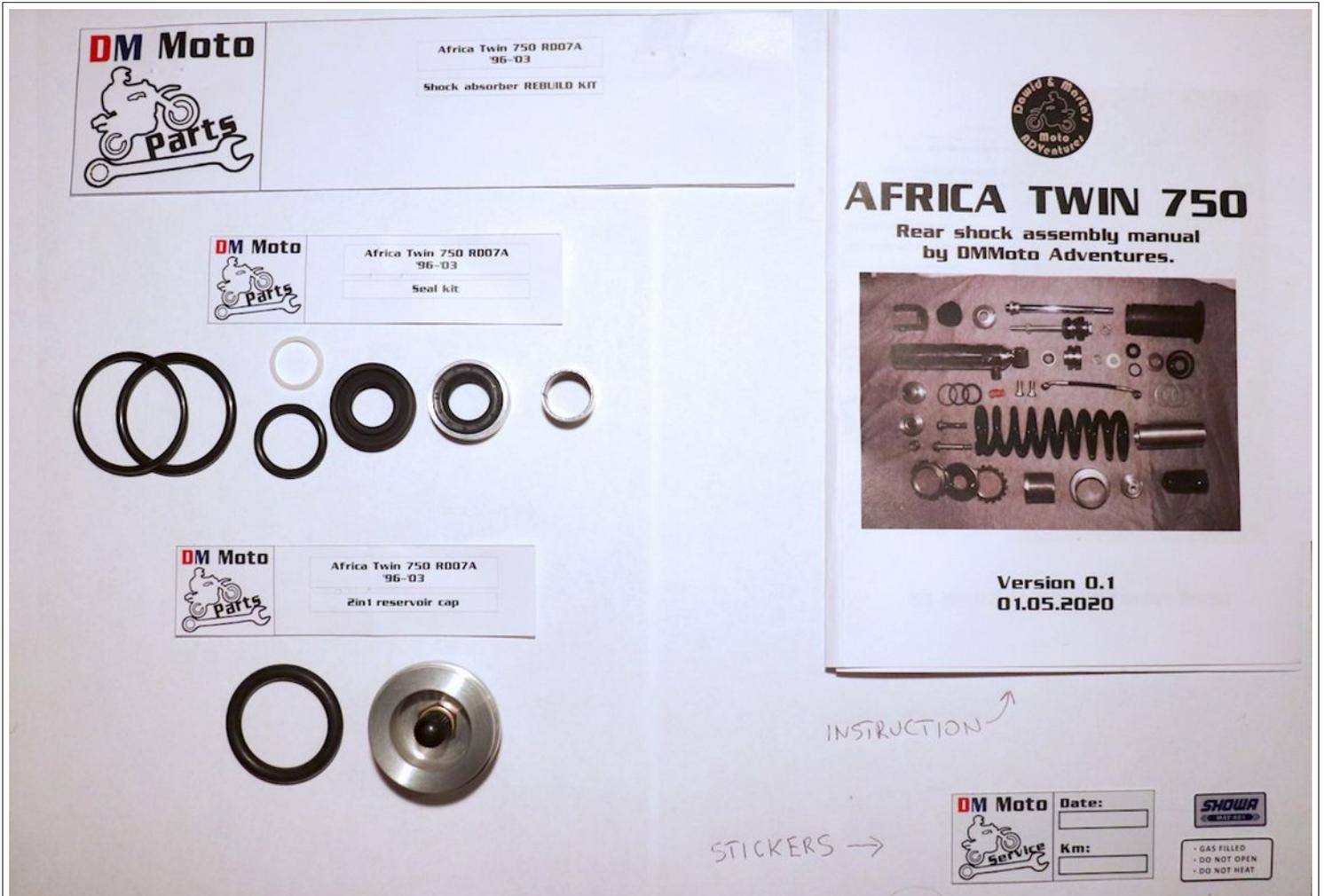
Repair kit #2

basic repair kit + gas valve + o-ring for original reservoir



Repair kit #3

basic repair kit + 2in1 reservoir cap with gas valve + o-ring



Other parts:

New piston rod with rubber bumper holder



Stainless steel braided hose



Neoprene sleeve



All parts from this service manual are available at our Facebook page (or just write email to us).

Facebook shop: <https://www.facebook.com/pg/DMMotoADventures/shop>

E-mail: contact@dmmotoadventures.com

Cheat sheet

Model	Part name	Parameters (dimension in millimeters)
RD07A	Oil seal	14x26x5 (original), 14x26x6,5 (our)
	Dust seal	14x22x4 + adapter ID:22
	Seal head o-ring	32,92x5,53
	Slide bushing	14x12
	Reservoir cap o-ring (original)	35x2,5
	Reservoir cap o-ring (our 2 in 1 solution)	28x5
	Spring	Free length 245mm, rate 70kg/cm, ID:57, OD:81
	Gas pressure	14-15bar (203-217 psi)

RD07	Coming soon...
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RD04	Coming soon...
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RD03	Oil seal	14x26x5 (original), 14x26x6,5 (our)
	Dust seal	14x22x4 + adapter ID:22
	Seal head o-ring	32,92x5,53
	Slide bushing	14x12
	Reservoir cap o-ring (original)	35x2,5
	Reservoir cap o-ring (our 2 in 1 solution)	28x5
	Compression adjuster o-ring (inner)	4x1,5
	Compression adjuster o-ring (outer)	12x2
	Spring	Free length 240mm, rate 100kg/cm, ID:57, OD:85
	Gas pressure	14-15bar (203-217 psi)

**We also want to confirm that this rebuild kit works for RD07, RD04.
It should be ready soon ... :)**

Now we can only guarantee that this kit works RD07A ('96 – '03) and RD03 ('88 – '89)

If you don't need our rebuild kit, but this manual was helpful for you and you were able to save money on service - you can support us by sending a tip for a beer or a gas for our bikes for the next trips :)



PayPal: <https://www.paypal.me/DMMotoAdventures>



FAQ - frequently asked questions

Here may be your question... feel free to ask.

PART 1
Shock disassembly

Original reservoir disassembly 1/4



That's how original shock looks like. You may notice there is no air valve in the air cap. Disassembly of this is a little complicated.



If you want to reuse the old reservoir cap, use a center punch tool before drilling in it. It is important to drill at the center in this case.



During drilling use a short drill bit. There is very big possibility of destroying the bladder. 1cm. (0,5in.) drill bit is enough!

Use eye protection!

Gas under pressure may blow metal shavings into your eye!

Original reservoir disassembly 2/4



To move down the air can cap you can hit reservoir cover gently with a hammer through a piece of wood.



Now its time to remove the air can cap securing ring.

You can also clean it a little using brake cleaner.



You need to pull the cover a little out to be able to hold it with pliers.

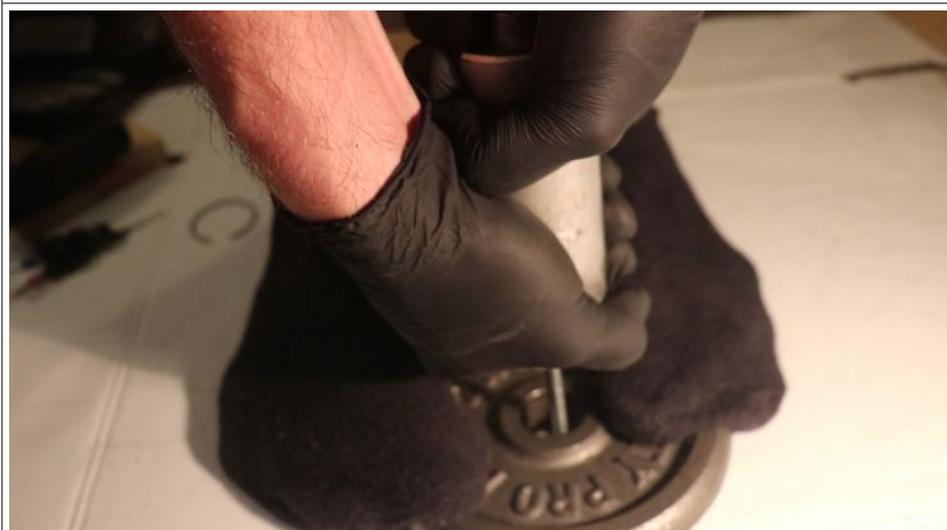
Then to pull the cover harder we need to tap the hole. I used a M6 tap.

Keep in mind that later you need to widen the hole to 7.8mm to mount the gas valve.

Original reservoir disassembly 3/4



Now screw in a long bolt with big washers there, so that we can pull out the cover, while holding by the washers.



I also used a weight plate as a big washer.



After one pull, the cover is separated from the reservoir.

Original reservoir disassembly 4/4



We push in the second air can cover (you can also hit it gently using a hammer)



And again we need to remove the securing ring



This cover should be much easier to pull out.

Removing the spring 1/2



Use a special wrench, punch tool or big flat screwdriver to loosen the spring adjuster locking nut.



Next you can loosen the spring adjuster



Now you can slide the spring up. Just above the stem is a nut (rubber bumper holder) and you should be able to hold it using a flat wrench.

Removing the spring 2/2



Use piece of long wood or metal to unscrew the stem.



Next demount the big flat washer holding the spring.



Now you can remove the metal collar, spring and plastic mudguard.

Removing the oil 1/1



Remove bladder from the reservoir back cap.



Then pump the shock absorber to remove the oil.

Removing seal head and piston 1/2



Use some old knife to push out metal cover a little.



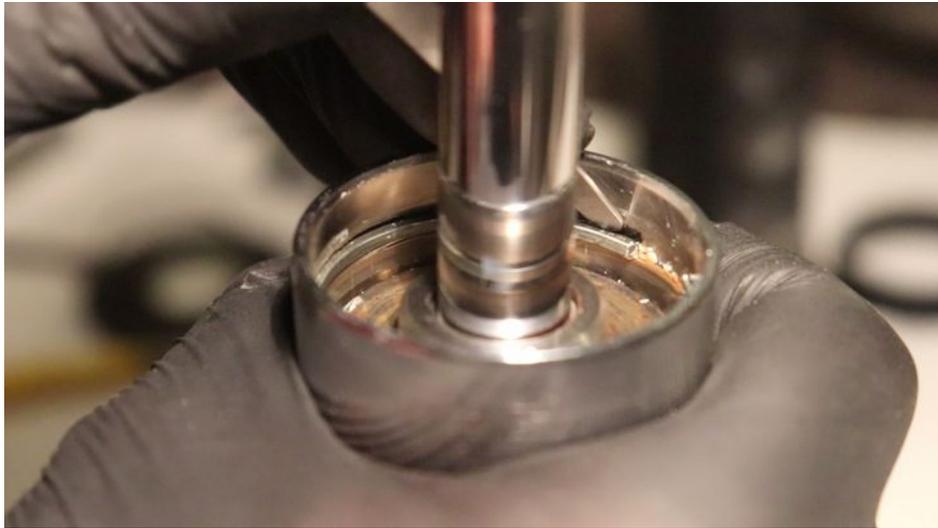
When there will be a bigger groove you can switch knife to a heavy duty punch tool.

But don't hit it too hard with a hammer to avoid damaging the cover.



Remove dust seal using a flat screwdriver.

Removing seal head and piston 2/2



Push in the seal head and remove the securing ring.



Now screw in the stem. Put a piece of metal through the stem and pull shock absorber body up.

Piston rod disassembly 1/2



To unscrew the piston nut use an impact wrench. It makes the job much easier.



Thread is damaged a little and it is normal (original nut is locked by punch tool). You may need to file the thread before sliding out the shim stack.



Slide out the shim stack from the piston rod to a screwdriver or a bolt.

Piston rod disassembly 2/2



Remove the seal head, the metal cover and the rubber bumper.



Now you can use a rotary tool to grind destroyed thread on the top of the piston rod

Seal head disassembly 1/3



First remove the rebound rubber bumper



Next remove the big washer securing the oil seal



Now push out the old oil seal using a screwdriver

Seal head disassembly 2/3



After that remove the last small washer securing the slide bushing



To remove the slide bushing we need to grind it a little using a rotary tool.



When the slide bushing is very thin we can use a small screwdriver to brake it apart.

Seal head disassembly 3/3



Our seal head is completely disassembled now!

Shock body disassembly 1/1



There are only 2 bolts left to unscrew to finish the shock body disassembly. Both are holding the hose connecting the shock absorber body to the reservoir cap.

First remove the banjo bolt from the reservoir cap.



Next remove the banjo bolt from the body side.



Our whole shock absorber is in parts now

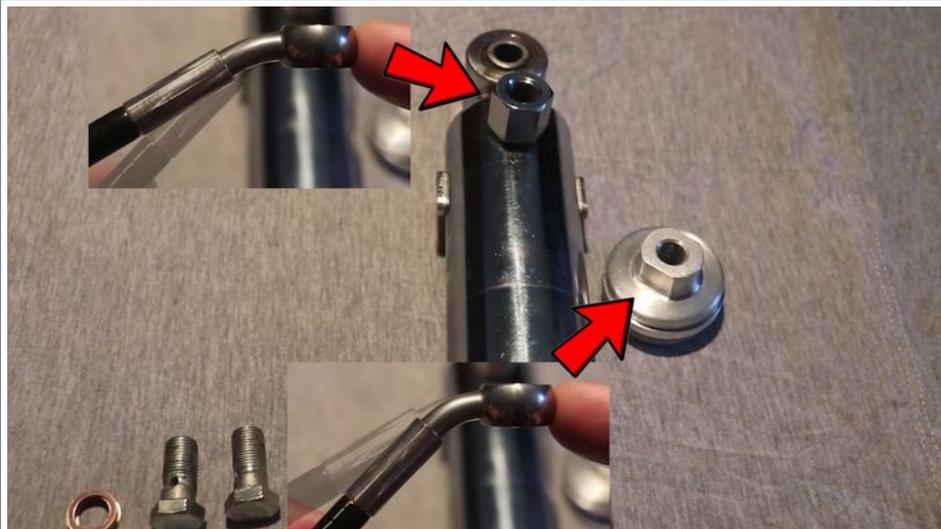
PART2
Shock assembly

Shock body and reservoir assembly 1/4



Needed parts:

- shock absorber body
- original reservoir cap
- stainless-steel braided hose
- 2x banjo bolt
- new set of copper washers



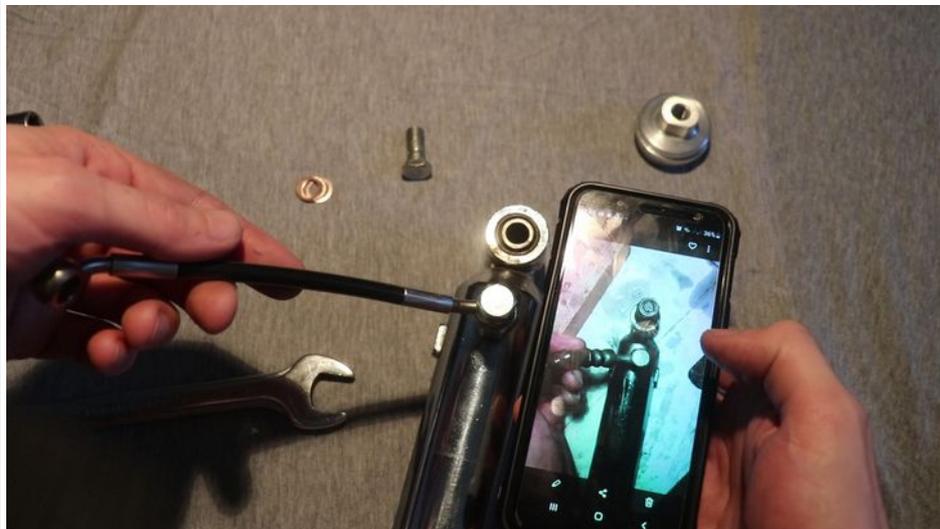
Pay attention to the banjo fittings.

They have two different bending angles, so look carefully and connect them correctly!



Use some thread locking fluid on the bolt before screwing

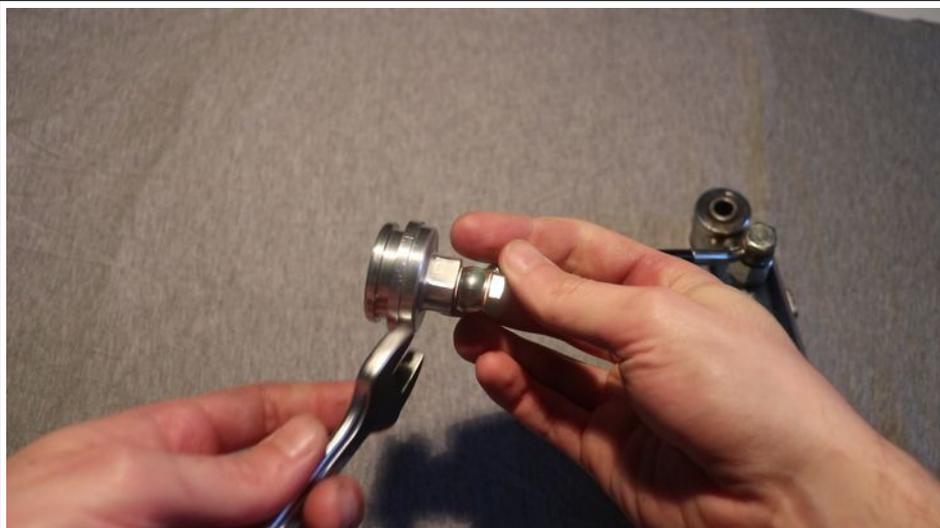
Shock body and reservoir assembly 2/4



Mount the new hose at similar angle as the original one.



Torque shock absorber banjo bolt to 23Nm (16,5 lb-ft).



Torque reservoir cap to 18Nm (13 lb-ft)

Shock body and reservoir assembly 3/4



Now we need:

- reservoir body,
- o-ring
- securing ring



Lube the o-ring and mount it on the reservoir cap.



Insert reservoir cap into reservoir body.

Shock body and reservoir assembly 4/4



Press in the reservoir cap until locking ring's groove will be visible



Insert the locking ring



Push out the reservoir cap using something soft.

Reservoir cap should be blocked by the securing ring in place.

Seal head assembly 1/5



Now we will press in the new slide bushing. Lube it with oil before inserting it into the seal head.



Insert it with hand into its place



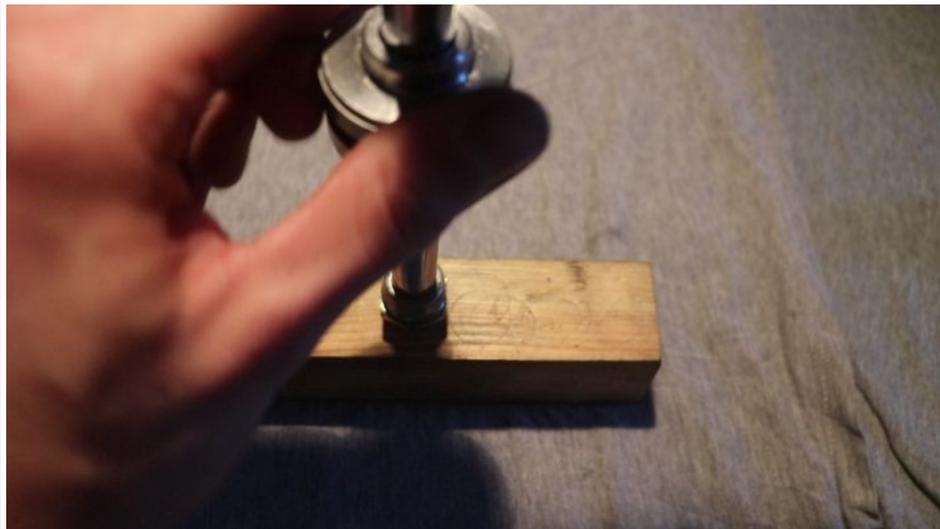
Always secure sharp edges with a tape to avoid damaging the seals or the slide bushing!

Seal head assembly 2/5



Insert the piston rod into the seal head upside down. Lube the rod and place it on a piece of wood.

Thanks to this you can use the rod's rubber bumper holder as a slide hammer to press in the slide bushing.



Slide the seal head up and down to press in the slide bushing.



Install the new dust seal.

Seal head assembly 3/5



After installation it should look like this.

Don't press it too far. Inner lip should stay free, it should not touch the seal head.



Now we will assembly the seal head.

You need:

- flat washer,
- main oil seal support plate
- main oil seal body
- main oil seal o-ring
- thick washer
- inner rubber bumper



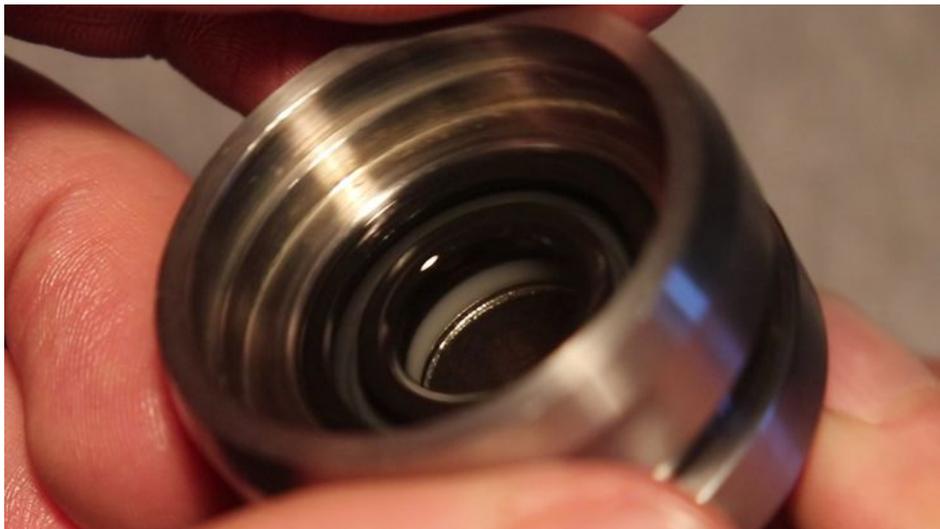
During every step lube all the parts with oil before assembly.

Insert the thin flat washer.

Seal head assembly 4/5



Insert the main oil seal support plate.



Insert the main oil seal body



Insert the main oil seal o-ring

Seal head assembly 5/5



Pay attention during pressing in the o-ring into the seal.

It also may be good idea to insert this o-ring before putting the main oil seal body inside the seal head.



Install the thick washer



Install the inner rubber bumper

Piston assembly 1/2



Install the rubber bumper and the shock absorber metal cover on the piston rod.



Carefully slide in the seal head on the piston rod.

Remember to use securing tape on the rod to avoid damaging the seals or the slide bushing!

Rotate the piston rod to make it easier to slide in.



Install the piston on the rod.

Shim stack order is very important, be extremely careful to not spill it out.

It's good idea to make a photo of it to be able rebuild this stack in any case.

Piston assembly 2/2



It may be a good idea to use a new piston rod nut.



Use thread locking fluid on the piston rod nut.

Torque it to 40Nm (30 lb-ft).



I forgot to install seal head o-ring.

To avoid damaging it secure the piston with tape.

Shock absorber assembly 1/2



O-ring is now in it's place.



Now insert piston into the shock absorber body.



Push in the seal head into the shock absorber body. Stop when locking ring groove will be visible.

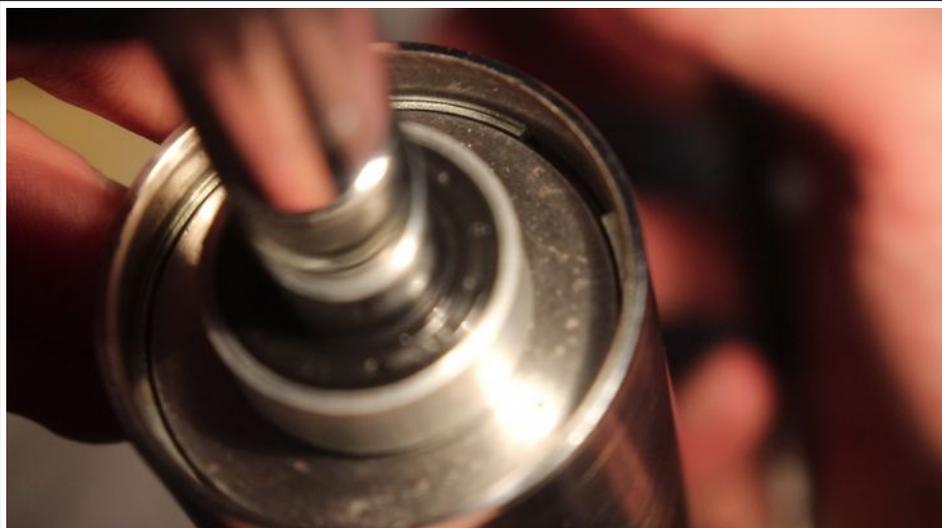
Shock absorber assembly 2/2



Insert the seal head securing ring

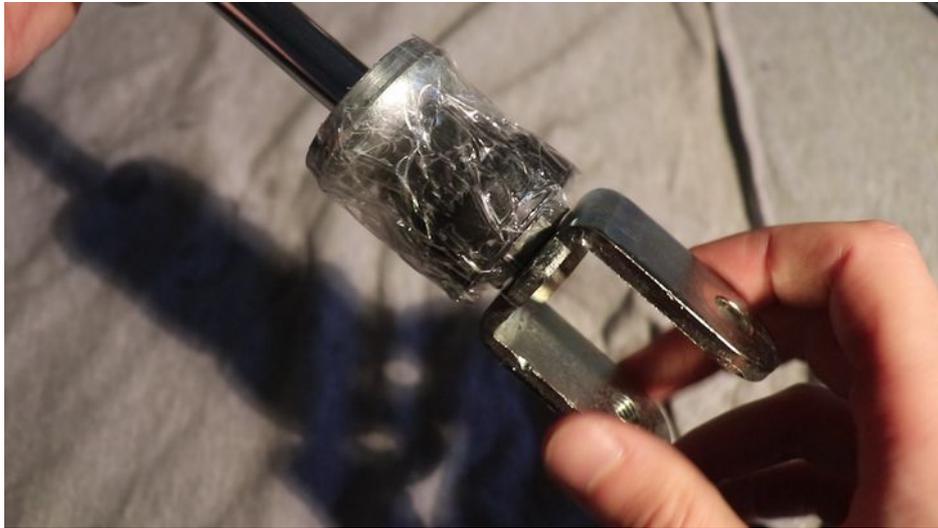


Pull the piston rod to lock the seal head in place.



Double check if the seal head is secured correctly.

Filling shock absorber with oil 1/2



Install the stem on the rod to pump the shock easier.



Pour in the shock absorber oil into the reservoir.



Pump the shock. Press it in, wait couple of seconds and pull it back.

Move the piston slowly, to avoid cavitation.

Filling shock absorber with oil 2/2



Try putting the shock in various positions.

All air from the shock absorber need to escape through the hose, so make it the highest point.



After some time of pumping you should see continuous stream of oil without any air bubbles. Make couple more pumping cycles, try various positions.

After confirming that there is no more air inside you can go to the next step.

Bladder installation 1/4



Put the bladder on the new reservoir cap.



As you can see bladder is collapsed. We need to pump it a little.



Stop pumping when it will look like this. It was only 2 or 3 pumps with this small shock absorber pump.

Bladder installation 2/4



Press the shock absorber all way in.



Pour some more oil. Make sure it will split out when you insert the bladder inside



Insert the bladder. You can notice that oil is spilling out.

Bladder installation 3/4



At this point the bladder will get stuck, and you won't be able to push it further.



Unscrew the air valve core using a special tool.



After that you can press the bladder further in. Locking ring groove should be visible.

Bladder installation 4/4



Install the locking ring.



Now screw in the air valve core.
Don't use too much force. This valve core has small and short thread, so it's easy to strip it.

Pumping and testing 1/3



Pump the shock. Make it slow at the beginning.

You can also try to pull the reservoir cap out.



After locking the cap in place and checking it you can pump the shock absorber to 10 bar (150 psi).

During this step pay attention and look for any oil or air leakage.



Leave the shock for some time (10 minutes to 2 hours) and check it again later for any oil leakage.

If there is no problem you can continue

Pumping and testing 2/3



Use some wood to hammer in the shock absorber metal cover.



Mark line 1 cm (0.4 in) before the end of the piston rod.



Adjust the pressure to 14 - 15 bar (200 - 220 psi).

Pumping and testing 3/3



It is important to disconnect the pump before next step!



Now put the shock on the weight scale and press the shock in to the line marked 1cm (0.4 in) before the end of the piston rod.

The weight scale should show 27kg (60 lbs).

You can adjust the pressure to achieve this, but it should be close to 14-15 bar (200-220 psi).

Spring installation 1/1



Assembly the spring preload adjuster.



Then install it on the shock absorber



Next install the spring

Mud guard installation 1/1



Assembly the mud cover and the spring bottom holder.



Install the rubber seal.
(in our case seal is destroyed)



Install the ready element on the shock.

Mud guard upgrade 1/1



As you saw on previous photo the rubber seal is destroyed.

In our case we will use neoprene sleeve.



We secure it with low profile zip-ties.

Stem and spring holder installation 1/1



Slide the rubber bumper a little down



There should be enough space for flat wrench.



Torque the stem using a piece of wood. You can also use some thread locking fluid on the thread.

Push the rubber bumper down to lock it on it's holder

Spring adjustment 1/1



Adjust the spring preload now or do it on the bike.

It is good idea to measure the spring length before disassembly, so you can set it to proper length after the rebuild.



Your shock absorber is ready :)

Some information for RD03/04/07



After 30 years it may look very bad inside ... be prepared



Securing ring is difficult to demount. First try to clean this area as good as possible. To remove the ring you need to press in the cap and use small screwdriver and piece of metal sheet (or old feeler gauge). It is difficult but possible.



To remove compression adjuster valve you need only a flat wrench.

Some information for RD03/04/07



Under compression adjuster valve are thin metal washer and its seat



To disassembly valve you need to screw in adjuster nut.



Black valve end will fall off and valve screw will be free.

Some information for RD03/04/07



I made tool to polish surface inside the reservoir using sandpaper and abrasive fabric. It should prevent oil/air leakage.



You should add some lube to prevent bladder – metal contact. Lube must be rubber friendly!



To fill the shock with the oil you can use compression adjuster valve body. But instead of the screw put rubber hose inside and connect second end to container.

Some information for R003/04/07



It is ready to fill with oil.

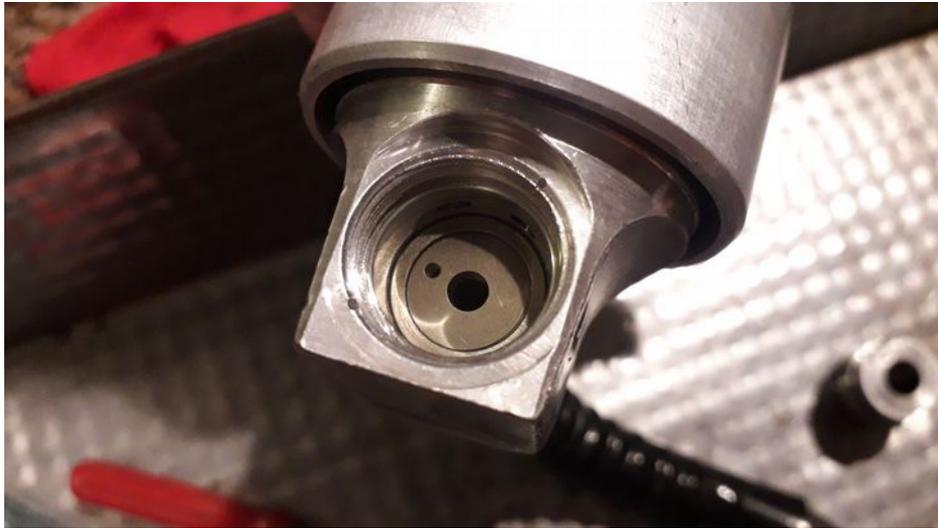


Pump the shock and move it around until there will be no air bubbles inside the hose.



Next we remove the compression adjuster body and insert seat for the washer (insert it in same orientation as in the photo)

Some information for RD03/04/07



Next we insert metal washer inside its seat.



To assembly compression adjuster valve we screw in inner part into body.



And we press in black valve end.

Some information for R003/04/07



Now we screw in the valve into reservoir cap.



We insert gas valve core to the second reservoir cap



And we pump the shock using air or nitrogen.