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This document provides instructions for removing and installing the chain, front sprocket, and rear sprocket on a Ducati Superbike with a single-sided swingarm. There are also directions for installing a Quick Change rear sprocket adapter. The torque values used are for the 748/916/996 from 1994 to 2001 and may be applicable for later models. Please double-check the shop manual or Ducati.com for the specific torque values for your model.

Note: Riding or doing ANY work on your Ducati can result in your skittering along the ground resulting in injuries and/or death. You, the reader alone, are responsible for your life. If, after reading the instructions and looking at your bike, you feel uncomfortable doing this job – don't do it. Take your bike to a professional mechanic for the job to be done right. If you decide to do the job yourself; you are responsible for the results – not Ducati.ms, anyone associated with Ducati.ms, or the author of this article.

14mm socket and wrench	15mm socket and wrench	Loctite Blue (or other medium strength threadlocker)
Stout circlip pliers	Torque wrench with capacity greater than 176nm (130 lbf)	Grease with Molybdenum Disulfide (moly)
41mm Socket or equivalent	1/2" f to 3/8" m adapter	Torque Wrench in In/Lbs.
8mm socket and wrench	Possibly a 1/2" f to 3/4" m adapter for the 41mm socket	

Tools and materials needed:

Procedure:

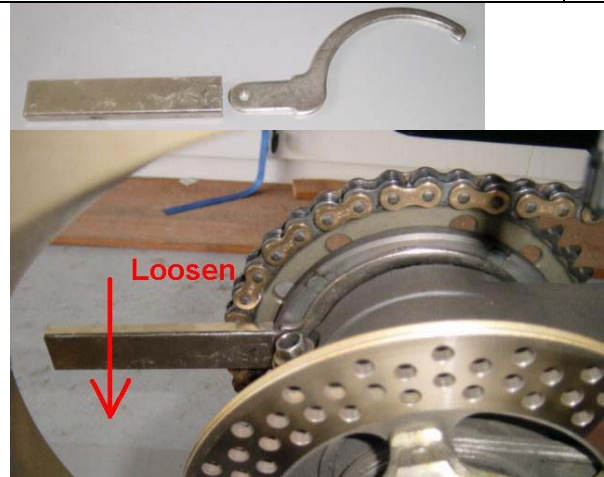
1. Place bike onto lift – if you have one. You can also leave the bike on the side stand. The problem with using a rear stand is that the stand will get in the way of removing the rear sprocket. For removing the chain, the rear stand won't be in the way.





2. Using a 14mm socket or wrench, loosen the two bolts at the back of the swingarm. You don't need to remove them.

3. To loosen the chain, take the spanner and handle out of your tool kit, place the handle onto the spanner, and put onto the adjusting collar as pictured. Rotate the handle downward to loosen the chain.



Break the Chain (if you're going to replace the chain):

- A. The stock chain is riveted. A die grinder or similar piece of equipment does a great job. You can also use a chain-breaking tool such as those offered by Motion-Pro as listed below.
- B. For a chain that has a clip-type master link, remove the clip. You can use a screwdriver or other prying device to pry off the side plate or use a chain tool and press out the pins according to the tool instructions.

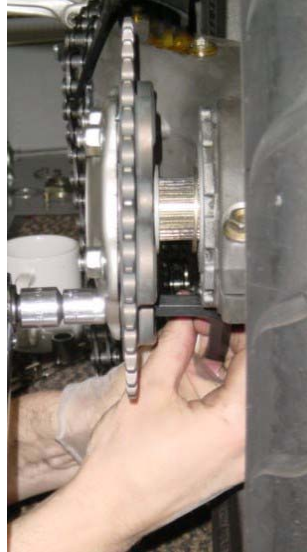
See chart at the end of these instructions to determine if you need to replace the chain or add links. No guarantee on the accuracy of the chart – I found it on the net and it has been right so far.

Also, if you don't have a chain tool, get one. Think of it as a commitment to motorcycling – or get a BMW. Mine is a **Motion-Pro** unit, p/n 08-0058. The one pictured is the 08-0135. They also have a less expensive one – 08-0001. You can go to <http://www.motionpro.com/> and use the dealer finder or head over to California Cycleworks: <http://www.ca-cycleworks.com/shop/catalog/ducati/chain.html>



4. Remove the zip-tie that holds the retaining clip in place. Toss that. But keep the retaining clip.

5. Loosen and remove the 41mm sprocket nut. Also remove the chain guard.



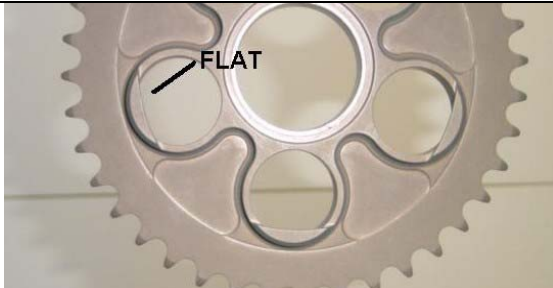
6. Using a 12mm hex wrench on the back of the cush drives, and a 15mm socket or wrench on the front, loosen and remove the nuts that hold the sprocket retaining nuts. I like to leave it on the splines so that it's easier to hold.

7. Now that the nuts are off, remove the sprocket from the shaft. Pictured is the back of the sprocket with a cush drive removed. You have an outer metal ring and an inner shaft/bolt. Sometimes, the rubber will degrade and the outer ring will back off and start machining the hub. One sign is metal shavings on the rear wheel. It is something that you need to keep an eye out for. High quality replacements can be purchased at: www.motowheels.com p/n **14-01301 Ti** or at your dealer.



8. Remove all of the cush drives and give the metal parts a good clean. It wouldn't hurt to put some silicone on the rubber section. Then apply some grease to the outer diameter (outer ring).

9. Flip the sprocket over so that the back is facing up. With your stout circlip pliers, remove the circlip that holds the retaining plate/flange to the sprocket. Remove the washer. Clean all pieces well.



10. Your new sprocket, or Quick Change sprocket adapter, should have flats on the back of the cush drive holes. These keep the cush drive outer rings from backing into your rear hub and causing damage. In addition, you need to make sure the center of the sprocket/adapter fits snugly to the center of the flange. If not, you'll need to press out the bushing from the old sprocket and press it into the new one.

11. Flip the sprocket or QC carrier over onto the back (side with flats on bottom). Drop the cush drives into the holes with the studs facing up. Grease the inside of the center hole. It wouldn't hurt to grease the retaining plate shaft that goes through the sprocket/carrier.



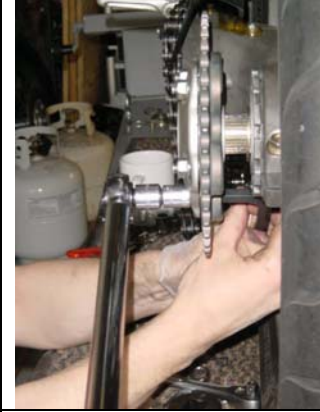
12. Place the retainer on the sprocket or QC carrier. Using the 12mm hex and the 15mm socket or wrench snug up the 5 cush drive nuts. Just tighten enough to keep it all together.

13. Place the sprocket/QC hub and retaining plate with the nuts facing downwards. Coat the washer with grease and place it over the coupling. Then replace the circlip.



14. Grease the splines on the hub. – you can also grease the shaft splines and the threads.





15. Slide the assembly over the shaft splines and, using the 12mm hex wrench and the 15mm socket with a torque wrench, torque the 5 nuts to 48Nm/36 ft/lbs.

16. Slide the assembly completely on. Slide on the washer and the nut. Torque the nut to 156Nm/115 ft/lbs. If one of the holes in the shaft don't line up with any of the slots in the nut, torque it a little more. Place the spring clip on the groove in the nut – with the long post through a groove and through a hole in the shaft. Make sure the curve is up against the nut. Then put a zip tie through both of the loops in the spring clip, tighten, and clip the end.



17. If you are installing a Quick Change Rear Sprocket Adapter, place the new sprocket onto the adapter plate and torque the 5 nuts to 48Nm/36 ft/lbs – or to torque recommended by manufacturer.

NOTE: For that racer-by look, you can run safety wire around the grooves on each cush drive stud.



18. To access the front (countershaft) sprocket. Remove the three screws securing the clutch slave cylinder and the two screws (5mm hex) securing the countershaft sprocket cover. The slave cylinder pictured is an Evoluzione slave cylinder with a larger bore that reduces the amount of pressure required to pull in the clutch. Yoyodyne also makes outstanding units. These can be found at: www.evoluzione.net , www.yoyodyneti.com , or www.motowheels.com

NOTE: There is no need to remove the slave cylinder from the clutch line. If you have an Evoluzione slave cylinder, use a zip-tie or tape to retain the piston inside the body of the cylinder.

19. Pictured is a stock cylinder. With the stock cylinders, be on the look out for fluid coming out of the boot, between the cylinder and the engine block, this is indicative of a leaking slave cylinder and means that you should be thinking about rebuilding or replacing. To Remove the front sprocket, back out the two screws holding the plate – using an 8mm socket or wrench, and remove the retaining plate by slightly rotating and pulling off.



20. Then pull off the sprocket. This is a good chance to clean out all of the accumulated mung, clean off the retainer plate, and clean the old threadlocker off of the two screws.

21. Coat the countershaft with grease and slide on the new front sprocket. Place the retainer plate over the countershaft down to the groove. Rotate the retainer plate in the groove until the plate holes line up with the threaded holes on the sprocket. Apply Blue (medium strength) threadlocker to each of the screws. Using the 8mm socket, tighten the screws to 6 Nm / 63 In/Lbs. **Inch/Pounds – not foot/pounds.** Replace the chain, on the sprockets and replace the clutch slave cylinder (10 Nm / 89 In/Lbs). Take the bike out of gear.



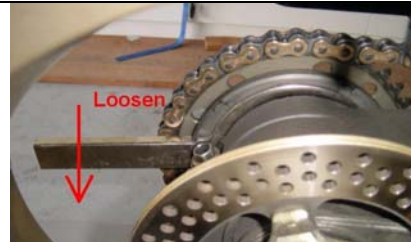
If you're going to replace the chain and it is still in place; place the old master link into the end of the old chain at the end of the top run. Hook the end of the new chain to the old masterlink and pull the bottom run of chain. Slowly. Hook both ends of the chain around the rear sprocket so that the ends meet. You can then put on the new master link in accordance with manufacturer's instructions.

If you're going to replace the chain and it is not in place; then you're stuck threading it over the front sprocket. Hook both ends of the chain around the rear sprocket so that the ends meet. You can then put on the new master link in accordance with manufacturer's instructions.



22. Replace countershaft cover.

23. Place spanner on front part of chain adjusting eccentric hub with handle hanging down. Pull back to adjust chain so that lower run has a total vertical movement of 1" with the rider sitting on the seat. Pull back to increase chain tension.



Sorry this is the only picture I took. You want the spanner around the front of the hub with the handle facing down.



24. Once you have the chain play to 1" – with you sitting on the bike – tighten these two nuts, with a 14mm socket, to 30 Nm (22 ft/lbs).

Note: Unlike some bikes that read the number of rotations of the countershaft, and see what gear you're in – to calculate speed, the Ducati Superbikes have the speedometer drive on the left side of the front wheel. Changing the rear sprocket will not result in your need to re-calibrate your speedometer.

OEM Links:

748 (520), 916 (525), 996 (525) = 94
998 (525), 999 (525) = 96
749 (525) = 98

25. Stock sizes for Chains.

You can change the final drive ratio; going to a higher ratio for better acceleration or to a lower ratio for a lower RPM at highway speeds.

748/916/996				
Sprocket Change Guide				
Gear ratio	Front:	Rear	Chain	Sprocket
R/F	Sprocket	Sprocket:	Links	Separation
2.40	15	36	94	—
2.47		37	94	- 4mm
2.53		38	96*	+ 8mm
2.60		39	96	+ 4mm
2.67		40	96	—
2.73		41	96	- 4mm
2.80		42	98*	+ 8mm
2.87		43	98	+ 4mm
2.93		44	98	—
3.00		45	98	- 4mm
3.07		46	100*	+ 8mm
3.13		47	100	+ 4mm
3.20		48	100	—
2.57	14	36	94	+ 4mm
2.64		37	94	—
2.71		38	94	- 4mm
2.79		39	96*	+ 8mm
2.86		40	96	+ 4mm
2.93		41	96	—
3.00		42	96	- 4mm
3.07		43	98*	+ 8mm
3.14		44	98	+ 4mm
3.21		45	98	—
3.29		46	98	- 4mm
3.36		47	100*	+ 8mm
3.43		48	100	+ 4mm
Notes:				
* Two fewer links will still fit, but with an 8mm shorter WB				
Allow 8mm adjustment for 1% allowable chain stretch.				
Measure before, then reset rear ride height after.				

WB = Wheel Base

In the “sprocket separation” column of the table above, the amount of change in the wheelbase will result in a change to ride height. That positive or negative change to ride height can be offset by increasing or decreasing the length of the ride height adjustment rod. First, you need to know where the ride height was before you made the change. That is better done with a specific tool and will be covered in an upcoming article on suspension.

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There is also the debate between 520/525/and 530 series chains.

520/525/530 chains all have the same pitch (distance from pin to pin). The width is different and 530 plates are thicker than 520. Sometimes 525 series chains have thicker plates as well.

As you can see below, the weight difference is pretty minimal. Replacing serviceable 525 chain/sprockets with 520 for enhanced performance is a questionable investment. This is a common change for a racer who will maintain chains better than the average rider and change chains more often.

These specs are for DID "professional O-Ring V series" chain.

Chain	pitch	width	strength	lbs/100 links
520V	5/8	0.250	6,830	3.36
525V	5/8	0.312	8,230	3.57
530V	5/8	0.375	9,600	4.55

Again:

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You are a member of www.Ducati.ms If you're uncomfortable doing work like this but would like to learn, post on www.Ducati.ms looking for someone who can work with you on this, and other, projects. That's one of the things that www.Ducati.ms is there for.

Thanks to Alex for the use of his Ducati 748 and for his hand modeling. –Mark Buckelew