

KTM 990 SMR / SMT Mod Book

By Kevxtx



Disclaimer: Kevxtx cannot be held responsible for any modification done to your own motorcycle, any modification you under take is your own responsibility, he is not liable for any claim from the mods listed in this mod book Kevxtx has put this mod book together so you can have all the info in one place.



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1 KTM 990 SMR



1.1 2012 KTM 990 SMR - INTERNATIONAL SPECIFICATIONS/TECHNICAL DETAILS

ENGINE

Displacement	2-cylinder, 4-stroke, V 75°
Bore/stroke	999 cc, 101/62.4 mm
Power	85 kW @ 9000 rpm
Torque	97 Nm @ 7000 rpm
Compression ratio	11.5:1
Starter/battery	Electric starter/12V 11.2Ah
Transmission	6 gears
Fuel system	Keihin EFI, throttle valve Ø 48 mm
Control	4 V/DOHC
Lubrication	Pressure lubrication with 2 Eaton pumps
Engine oil	Motorex, SAE 10W-50
Primary drive	35:67
Final drive	17:41
Cooling	Liquid cooling
Clutch	Multi-disc wet clutch, hydraulically operated
Engine management/ignition	Keihin EMS

CHASSIS

Frame	Chromium-Molybdenum trellis frame
Sub frame	Aluminium
Handlebar	Aluminium, tapered, Ø 28/22 mm
Front suspension	WP-USD Ø 48 mm
Rear suspension	WP-Monoshock
Suspension travel front/rear	160/180 mm
Font brake	2x Brembo Monobloc 4-piston fixed-calliper, rad. bolted, Ø 305 mm
Rear brake	Brembo 2-piston floating calliper, Ø 240 mm
ABS	Bosch 9M+ Two Channel
Wheels front/rear	Cast aluminium wheels 3.50 x 17"; 5.50 x 17"
Tires front/rear	120/70 ZR 17; 180/55 ZR 17
Chain	X-Ring 5/8 x 5/16"
Silencer	Twin stainless-steel silencer with reg. catalytic converters
Steering head angle	65.6°
Trail	109 mm
Wheel base	1.505 ± 15 mm
Ground clearance	195 mm
Seat height	875 mm
Tank capacity	approx. 15 litres/3.7 litres reserve
Weight (ready to race)	approx. 192 kg (without fuel)



2 KTM 990 SMT



2.1 2012 KTM 990 SMR - INTERNATIONAL SPECIFICATIONS/TECHNICAL DETAILS

ENGINE

Displacement	2-cylinder, 4-stroke, V 75°
Bore/stroke	999 cc, 101/62.4 mm
Power	85 kW @ 9000 rpm
Torque	97 Nm @ 7000 rpm
Compression ratio	11.5:1
Starter/battery	Electric starter/12V 11.2Ah
Transmission	6 gears
Fuel system	Keihin EFI, throttle valve Ø 48 mm
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	120/70 ZR 17; 180/55 ZR 17
Chain	X-Ring 5/8 x 5/16"
Silencer	Twin stainless-steel silencer with reg. catalytic converters
Steering head angle	65.6°
Trail	109 mm
Wheel base	1.505 ± 15 mm
Ground clearance	195 mm
Seat height	855 mm
Tank capacity	approx. 19 litres/3.7 litres reserve
Weight (ready to race)	approx. 196 kg (without fuel)



3 2010 KTM 990 SMT AND 990 SMR: MD FIRST RIDE

This is Part One of a two-part report on our recent test of new KTM bikes for the U.S.

Is a supermoto - a dirt bike with road race tires and brakes-the ultimate motorcycle? If you worked all day in a giant orange shed, you'd think so. "It's our heritage," said KTM P.R. Manager Thomas Kuttruff, referring to KTM's 20 years in the supermoto business. Of course, riding around on a frantic, short-geared thumper can be limiting, so adding a second cylinder to a supermoto makes a versatile, fun and reliable bike you can ride every day, even for long highway stints.

KTM first treated the world to big supermotos with the [950 SM](#), which it upgraded to a 990 a few years ago, adding fuel-injection and some more ponies. You may think the Supermoto is just a [Superduke 990](#) with less bodywork and more suspension travel, but

you'd be wrong. The Supermoto, Superduke and RC8 Superbikes all have different motors: the [990 Supermoto](#) and 990 Adventure share the most dirt-oriented motors, with a single-shaft counter-balancer as opposed to the Superbike's dual gear-driven balancers. The frame and suspension is different too.

Americans get two versions of the big supermoto, the sporty R and a more practical tourer. Both bikes share a liquid-cooled, fuel-injected, four-valve 75-degree 115-hp motor and basic chrome-molly trellis chassis. From that common ancestor, KTM's engineers started adding go-fast bits to make the R. Wheels are forged Marchesinis, saving 4.4 pounds of rotating mass, and it gets those delicious four-piston Brembo monobloc racing calipers. A supermoto needs a powerful, sensitive rear stopper as well: the R (and T) is equipped with a two-piston caliper back there. The minimal plastic bodywork is deceptive: the low-profile tank holds almost four gallons.



The T is a little more staid, but not much. It gets cast, two-piece calipers, softer suspension (but still fully adjustable), a larger 5-gallon tank, a windscreen and easily detachable semi-hard luggage. There's also a larger, more passenger-friendly saddle and a luggage rack. Wheels are a little heavier than the R's, and the fork doesn't get the fancy black TiAn coating. That all means the T is 432 pounds without fuel, compared to the R's 417-pound claimed weight, but both bikes are priced the same at \$13,998.

Since the KTM 2010 model intro I attended was mostly a racetrack event, there was only a brief street ride to evaluate the T, but there were a few Rs available for track evaluation. No matter: riding the R on the track may have been the most fun I had all day. Sure, it's heavier and (a lot) slower than the RC8 R, but its wide, flat, high handlebar and torquey motor made it big fun to snap in and out of turns, and the bike's balanced nature and slim form made it feel a lot lighter than it was. No need to move my rapidly disintegrating body around so much: just roar up to the apex, snap it in, power out, repeat.



Out on a brief street ride, the R inhaled the twisty Laureles Grade, with more-than-ample power and that same grippy, tenacious feel it exhibited on the track. Riding a supermoto with this kind of power, brakes and excellent suspension doesn't really feel like a fair fight. If I had one, I'd probably have to make new friends. Power is snappy, with the same excellent fuel-injection and part-throttle response the RC8 R showed (featured in Part Two later this week), and the gearing felt about right for fast roadwork. The motor is more raw and buzzy than the silky, quick-revving RC8 mill, but if you're used to a thumper dual-sport, it's not objectionable. But a touring rig it's not: the narrow, hard seat became noticeable after about 30 minutes of riding, and



wind protection is zero. Think of the SM R as your basic inner city commuting/Sunday back roads thrasher.

For something almost as fun and much more practical, the SM T should work much better. The seat is more seat-like and the windscreen and hand guards offer some useful wind protection. The seating position keeps the 'old knees from bending too much, and the bars are high. The bags, while small, are unobtrusive (making for easy lane-splitting) and easy to remove or attach. The larger bags for the 990 Adventure can be fitted, although that would require new brackets.



The main difference between the T and the R-as long as you're not working the brakes too hard-is the softer suspension. The T exhibits the same neutral, easy steering, except with a plusher ride. And "plush" doesn't just mean soft. There's actual controlled damping, and the three-way (compression, rebound and spring preload) adjustable WP components (with adjustments that actually do something) should let the rider fine-tune the ride to perfection. It tracks through corners, keeping the wheels on the ground, and bumps and potholes don't jar your spine the way some European bikes would.



I loved scraping up my brand-new Dainese knee pucks in Laguna's fabled turns on the RC8s, but street riding is satisfying because you can do it all day long and the variety of roads is endless. What heightens that experience is having a bike that handles like a well-set-up race bike in the twisties but is comfortable to ride on the boring stretches in between. The 990 SM T is one of those bikes, a real do-it-all machine with tremendous character, performance and reliability.



One bike I didn't get to ride, which makes its debut in both the USA and Europe, is the 2010 690 Duke R. It's based on the excellent [690 Duke](#), a single-cylinder supermoto that's designed to be a fun and reliable street bike. The R version takes the 65-hp, 654cc liquid-cooled Single from the standard 690 and (heh, heh) pumps it up to 70 hp with more compression and another 45cc: it's an actual 690. The motor goes into an orange-painted trellis frame, suspended by upgraded front and rear components. A pound is shaved off the 690's 327-pound tank-dry weight with some carbon pieces. I've ridden the 690 Duke, and found that bike to be as light, good-handling and torquey as you'd guess: a 65-hp Single used to be the realm of cooped-up Scandinavian winter tinkerers, but now anybody can buy one of these for \$10,998, just \$500 more than the standard 690 Duke.



Adding the T and R to the lineup gives KTM USA a full range of large-displacement street bikes, unimaginable a decade ago. They're priced out of the market the Japanese bikes swim in, but are affordable compared to competition from BMW, Ducati and Aprilia. 2010 will be a great year for superbike and supermoto comparison tests.



4 OVERVIEW OF THE MODIFICATIONS

Since May 2011 I started recording all my mods in detail as I found very little info about our SMT/SMR's on the net & the effects directly related to our models. All the mods below list have been done to my 2010 990SMR.

- Making a Tune ECU cable & installing Tune ECU on a PC would be my very first mod. Cost around US\$35.00
- Turning off the O2 sensor would be my first on the list to actually do on the bike, costs nothing to do unless you fit O2 eliminators. Smooths out the ride nicely, well worth doing. Slight increase in fuel usage. Free
- 16T front sprocket, reduces the chain slap around 3000 RPM, much easier to control the bike at city riding speeds. Smooths out the ride. US\$30.00, 17/11/12 Now running 17T front & 42 rear sprocket, feels quite good.
- Throttle tube mod, removes the twitchy throttle at small throttle openings.
- Raise the forks through the triple clamp by 6mm, much quicker steering in the tight stuff, if you do a lot of high speed riding this mod is not for you. Free
- Slipper clutch, safety item, should come standard on all 990's, you can brake later in the corners, the rear suspension keeps the rear tyre on the ground more under hard braking & changing down. Cost me US\$850 shipped, best mod on the 990.
- Aftermarket cans, personal choice I would think, Leovince provided the goods in weight reduction, gains in HP & Torque, the Dyno test on the Leo's proved a budget set of cans can show good gains. US\$750 You need to load the Akra fuel map. turned off the SAS & remove all the emission control kit. Fitted SAS blanking plates US\$30.00, to turn off the SAS use Tune ECU, Free.
- Removing the second Flies & shafts, a great Dyno result & can feel the gains, smooths out the ride even more at lower RPM's, compression braking is reduced for better control around roundabouts. Free
- DNA or MH air boxes, cost a lot but well worth the gains compared to the standard air box. Saves a little on weight, with increased air speed & volume to the throttle bodies, will need a Dyno made custom map to tune correctly. Can run on the Akra map but best result would be a custom made map.
- Electronic Power Control, I did not really find any gains from the mod, I will test it next time I am on the Dyno with it turned on & off.
- 2nd radiator fan, standard bike works fine, I just wanted more cooling when the fans ran & found they ran less with more air been drawn through by the



2nd fan.

- Radiator protection, homemade grill, only cost a few \$ to make.
- Shorai battery, 2.9kgs weight saving, higher cranking CCA, expensive mod. I can move the battery from bike to bike, I tend to renew my bike every 18 months.
- Stainless steel engine bolt kit, just Bling.
- Dyno jet Wide Band Commander 1, expensive but can tune any bike with it. Checks & data logs the A/F ratio's.
- PCV, great tuning tool.
- Lowered the rear brake lever as I was dragging the bakes all the time.
- Lowered my gear lever one spline, for more positive gear selection on the up change.
- Fitted a SMT seat on my SMR, far more comfortable than the SMR seat.
- Dual Velocity stack mod now with KTM RC8 OEM stacks.
- Oberon clutch slave cylinder.
- Modified offset DNA MK3 base plate, new plate made up with holes moved by 20mm to centralize the stacks for more even air flow across the air box lid.
- Engine breather mod, pipe blocked off on the air box & a mini filter fitted to the engine breather hose.
- Running Akrapovic 0648 cats in my Leovince pipes,
- Fitted an Autotune AT-300,

4.1 Weight savings

Leovince saves = 4530g

Shorai battery saves = 2930g

MK3 air box saves = 1025g

STM slipper clutch saves = 350g

Rear pegs removed saves = 840g

2 X O2 sensors removed & 2 blanking bugs fitted saves = 180g

Rear pegs removed saves = 840g

SAS system removed & 2 banking plates fitted saves = 480g

2nd flies shafts & motor + TPS removed saves = 340g



Total saving on my bike so far = **11515g**

4.2 Further Planned Modifications

I still have a few more mods in mind, with some in progress.

- 2nd fuel tank as the SMR fuel range is no good for me, I need a few extra liters of fuel.
- Handle bars, want lower bars, or to machine the triple clamps to reduce bar height.
- Titanium bolts to reduce weight, I did this on my last bike which shaved off a few hundred grams.
- Akrapovic Titanium full exhaust system, weight saving approx 3kgs, extra HP approx 2hp.
- Throttle bodies to be bored +2mm, I have a spare set of throttle bodies & will get them bored +2mm with a +2mm bigger throttle plate. I will send them from Oz to the USA to be bored sometime.

I modify bikes for a hobby, this is my 44th bike I have owned & have just about modified all of them in some way, it's additive once you start playing.

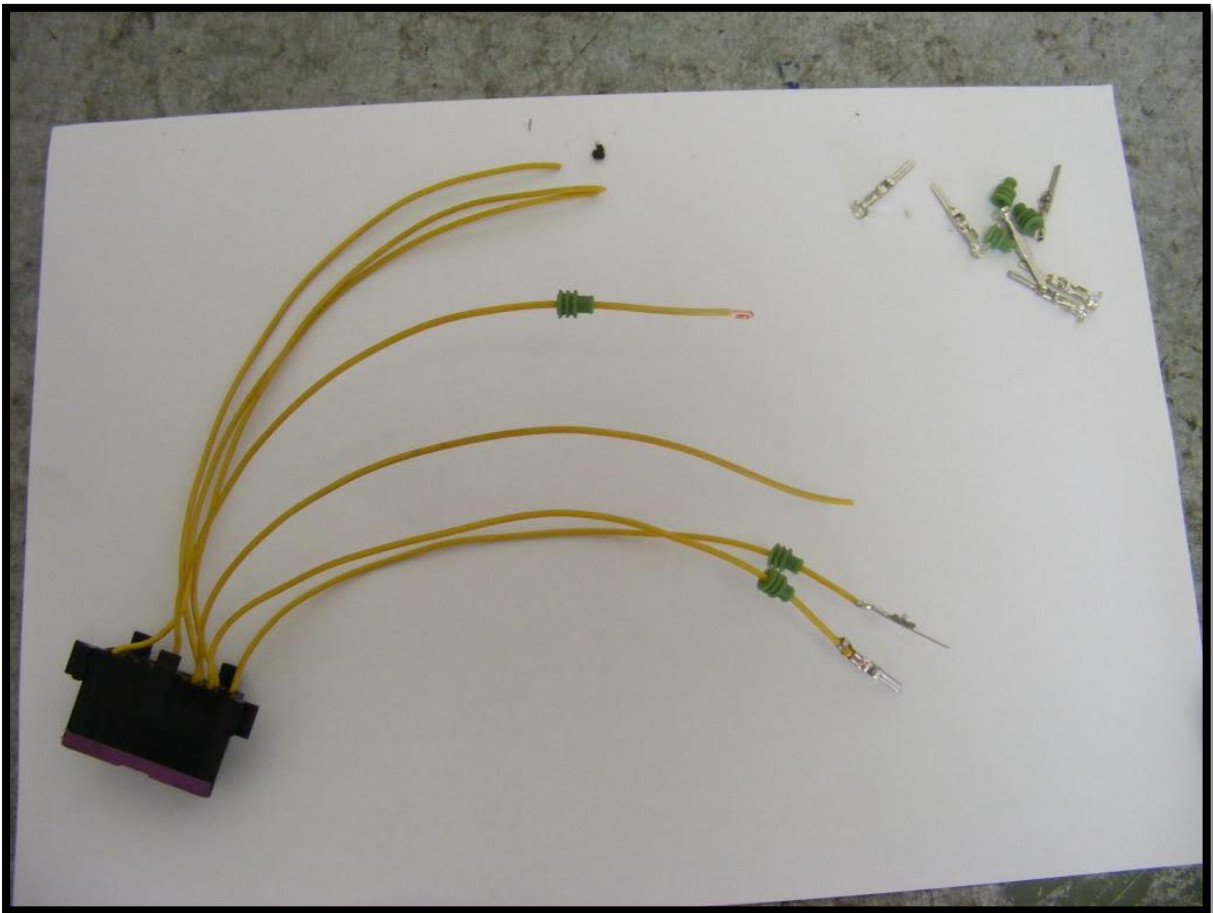


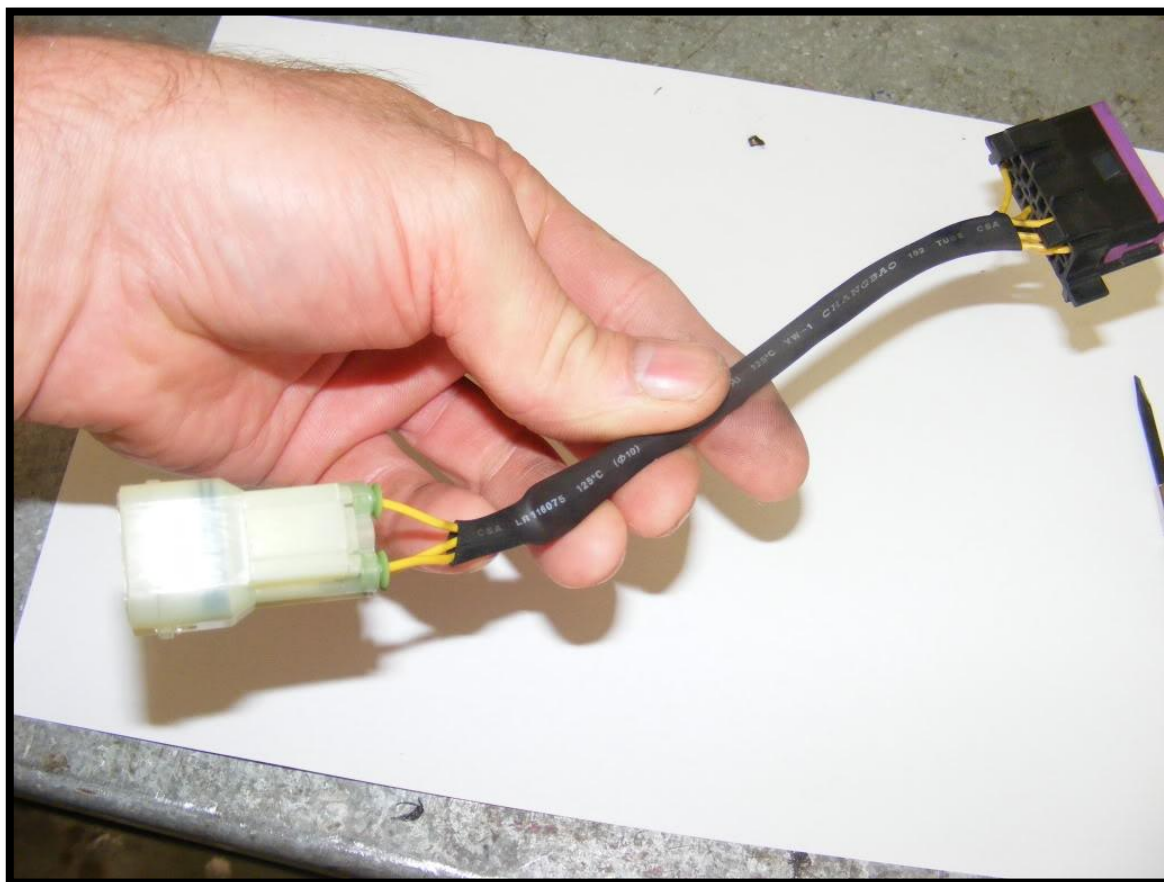
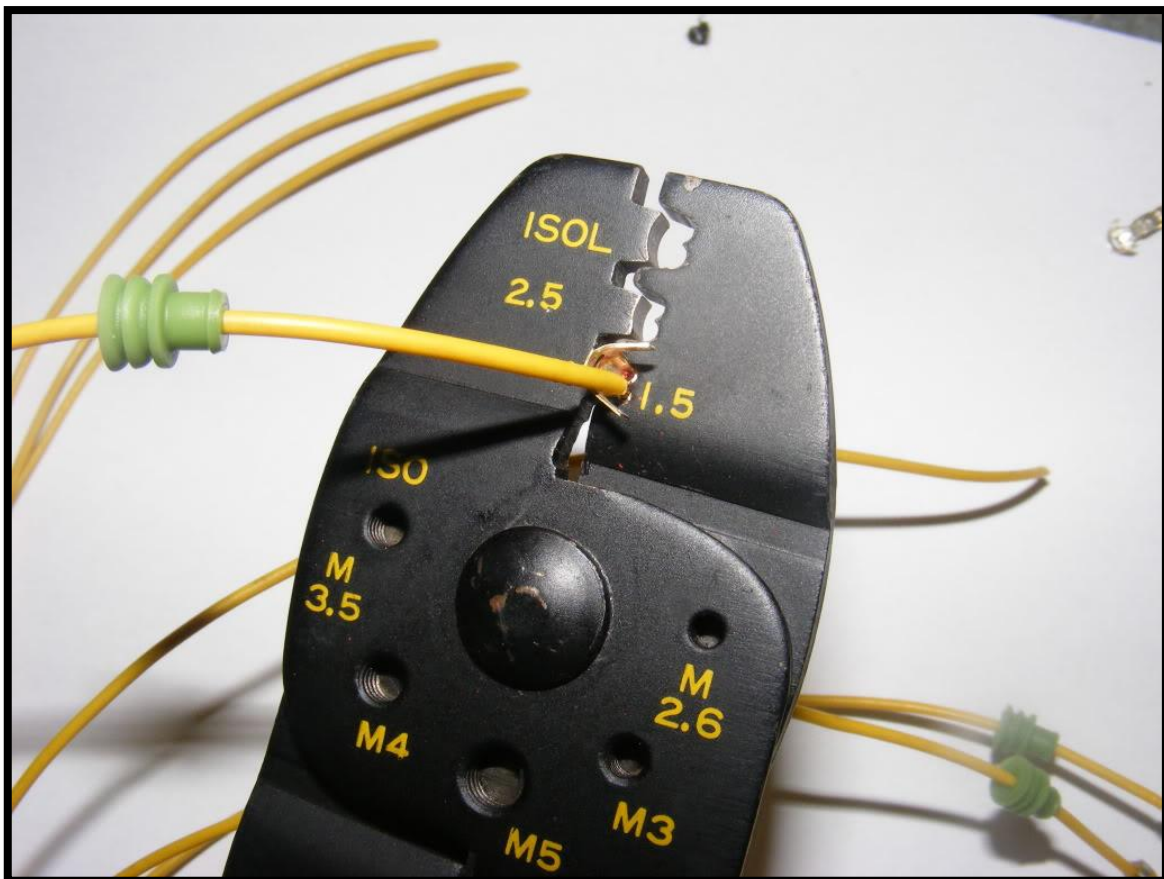
5 MODIFICATION DETAILS

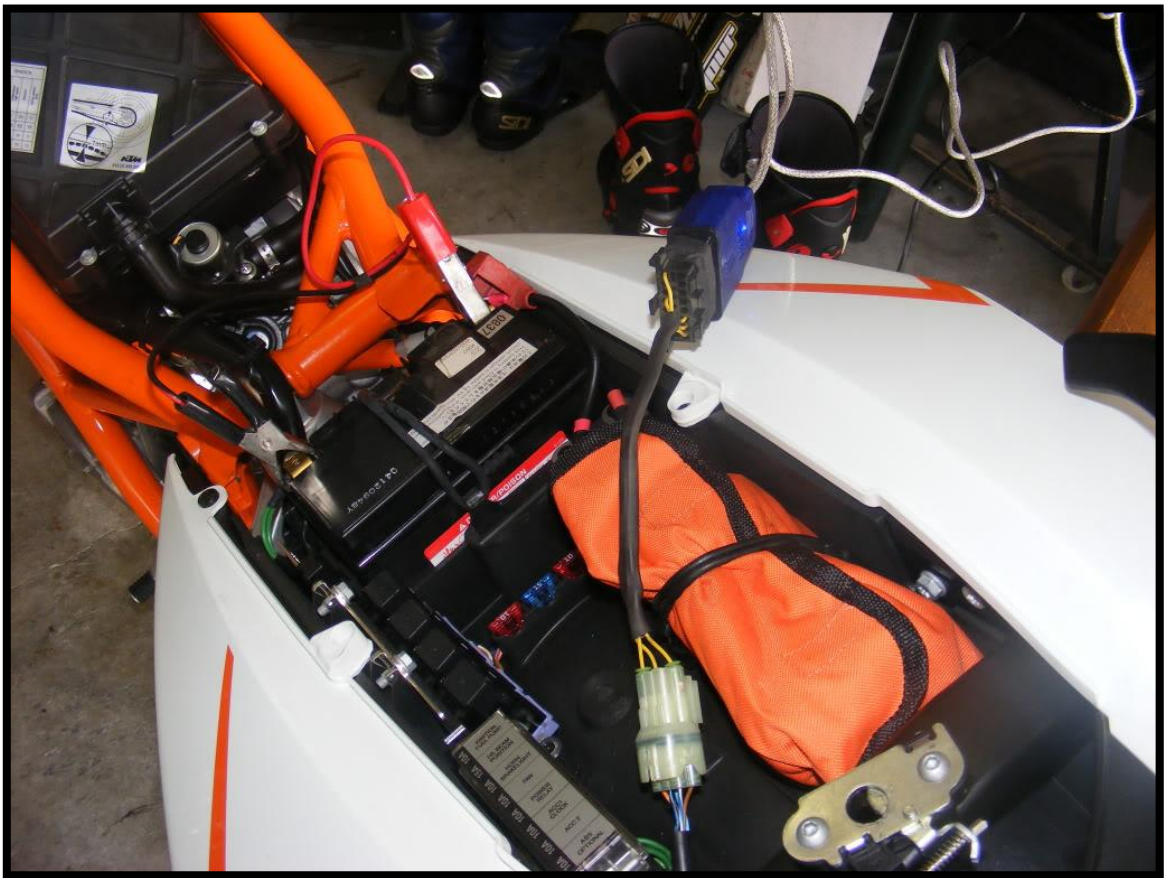
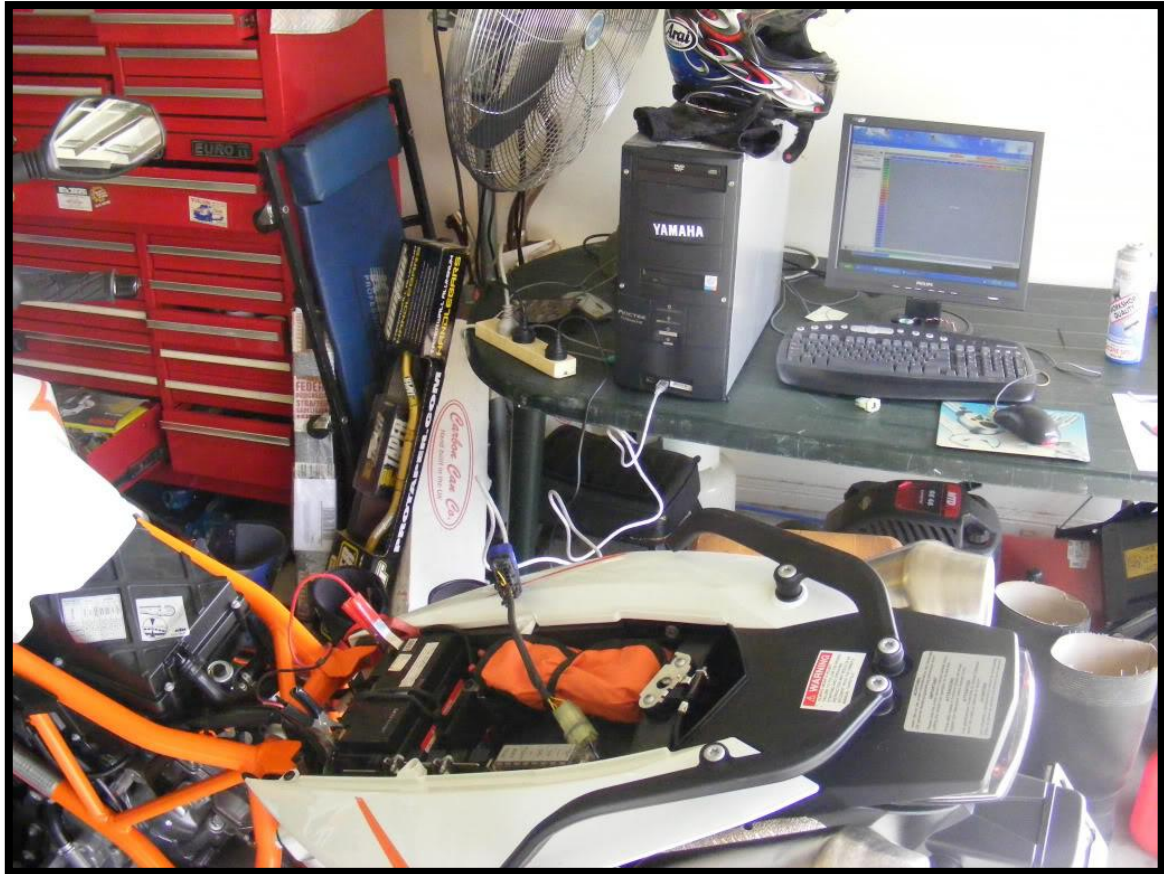
5.1 THE TUNE ECU CABLE

Used a program called Tune ECU <http://www.tuneecu.com> the cable cost around US\$35.00 to make & the program is free to use. With this cable & program you can program all the fuelling & ignition timing on each cylinder & many other functions. It is one of the best programs I have ever used.

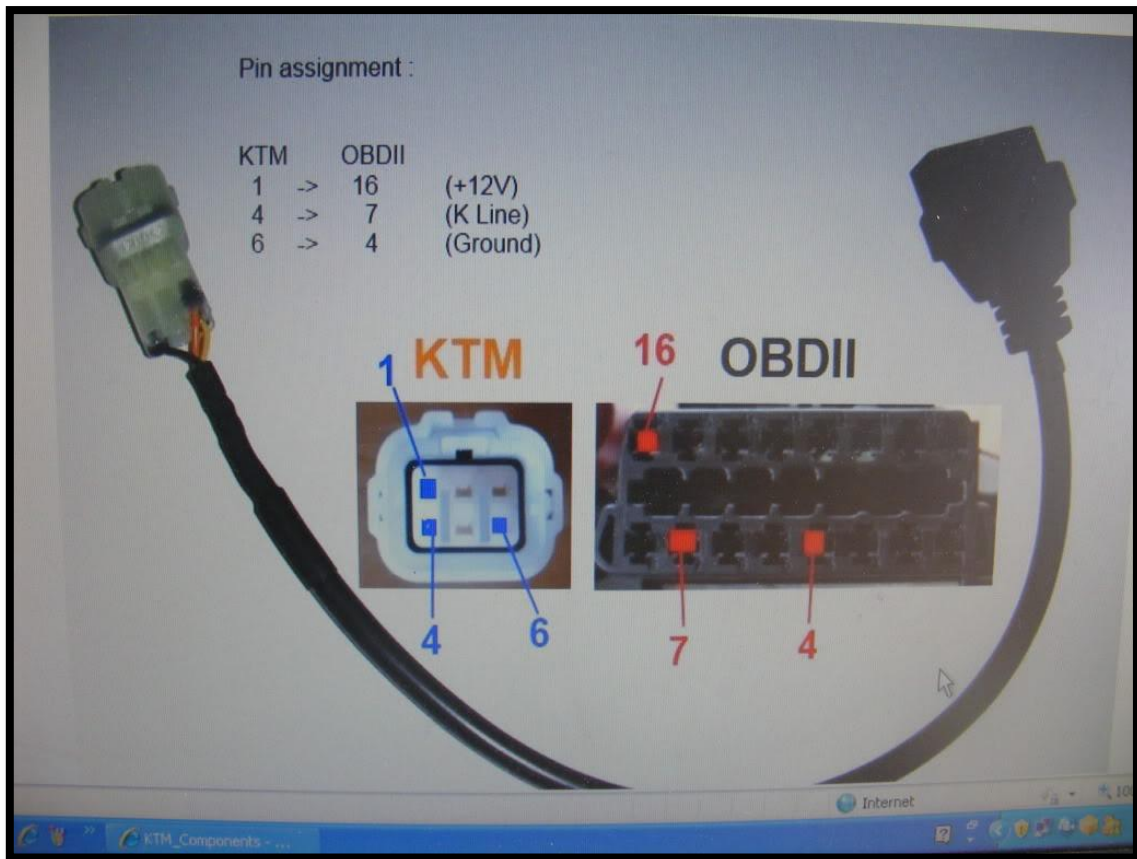
<http://www.ktmsmt.com/viewtopic.php?f=13&t=3090> [viewtopic.php?f=13&t=3090](http://www.ktmsmt.com/viewtopic.php?f=13&t=3090)







KTM



I then turned off the O2 sensors with a 15 min cold reset. Great result with the O2 sensors turned off well worth doing. I checked the A/F ratio on the cruise & it was around 14.7:1 with the O2 sensors on & around 14.2:1 with them off. Turning off the O2 sensors will make your ride much smoother.

5.2 16T FRONT SPROCKET

A great mod for around town, the bike rides much better with less drive line shunt around the 3000 rpm range; bike is more ride-able around town. It costs around US\$30.00 for a sprocket.

I have also run 17T front & 42 rear sprockets, feels quite good. Nice new chain & sprockets makes the ride so much smoother.





When comparing 16/41 to 17/42 there is no chain slap, better cruising speeds over 80kph pull the gears longer, not as good around town below 60kph pick up is less at low RP M's. The difference in RPM is 17/42 revs 143rpm less in 6th at 100kph then 16/41 ratio, or approx 4 KPH faster at the same RPM. I was looking for a 43T rear sprocket but could not find one.

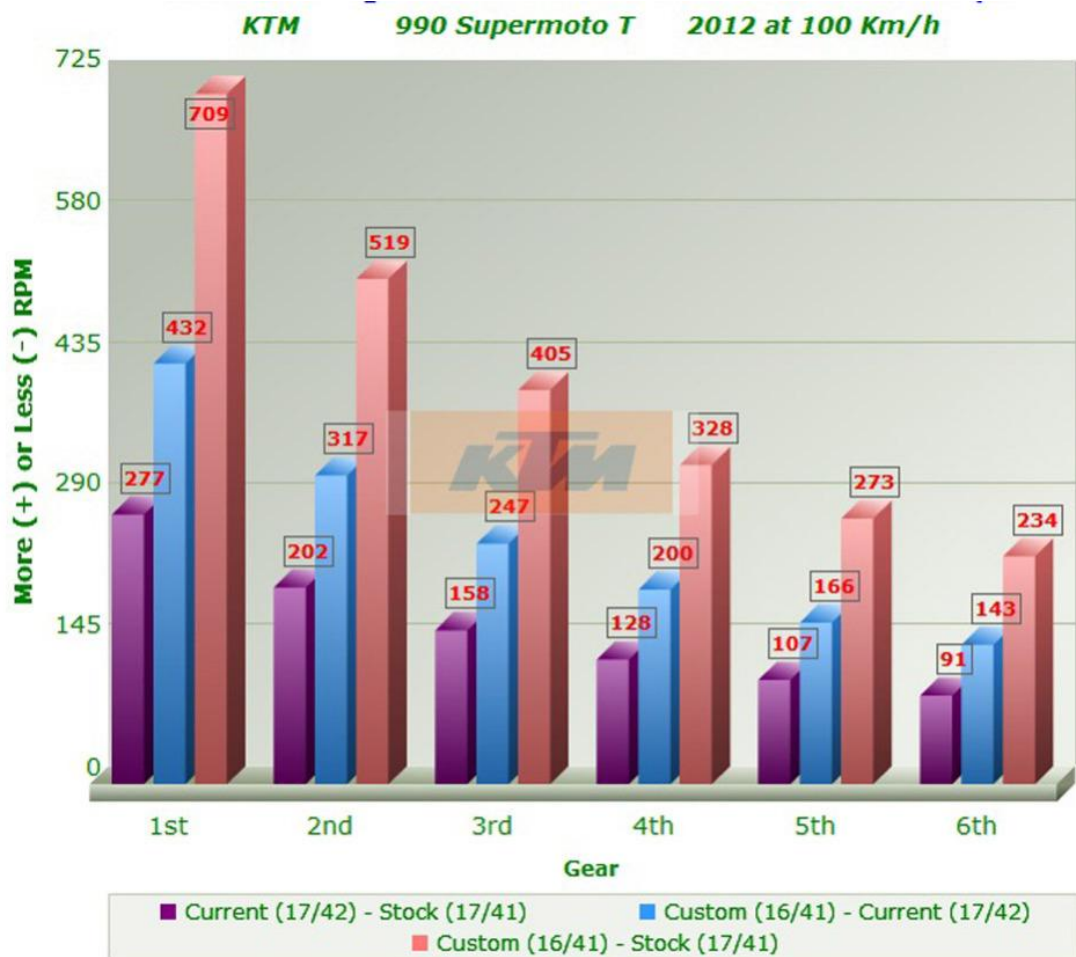


Here is a graph with each gear ratio/RPM at 100 kph, the numbers is the difference in RPMs between the gear ratios at 100kph.

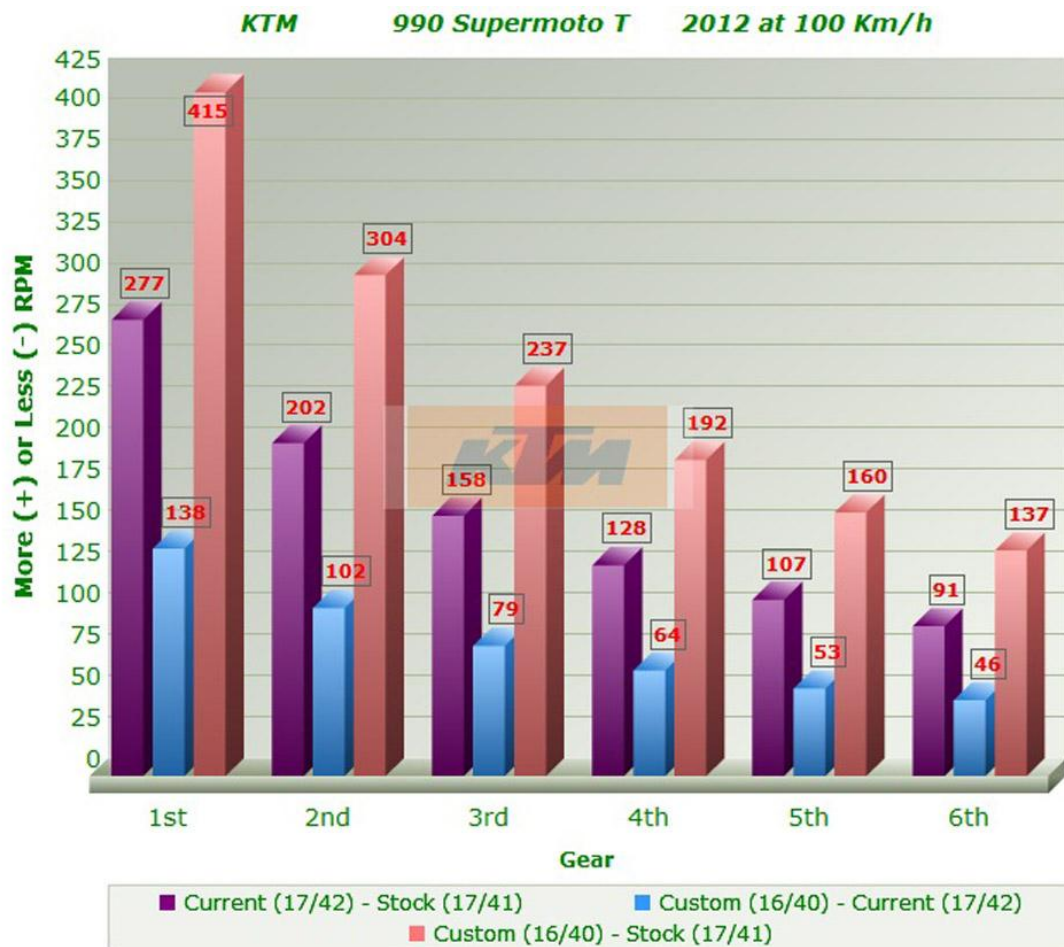
Stock = 17/41

Current = 17/42

Custom = 16/41



Other ratio's - 17/41, 17/42 & 16/40



I prefer the 16/40T gear ratio over all.

5.3 EPC RETARD REMOVAL

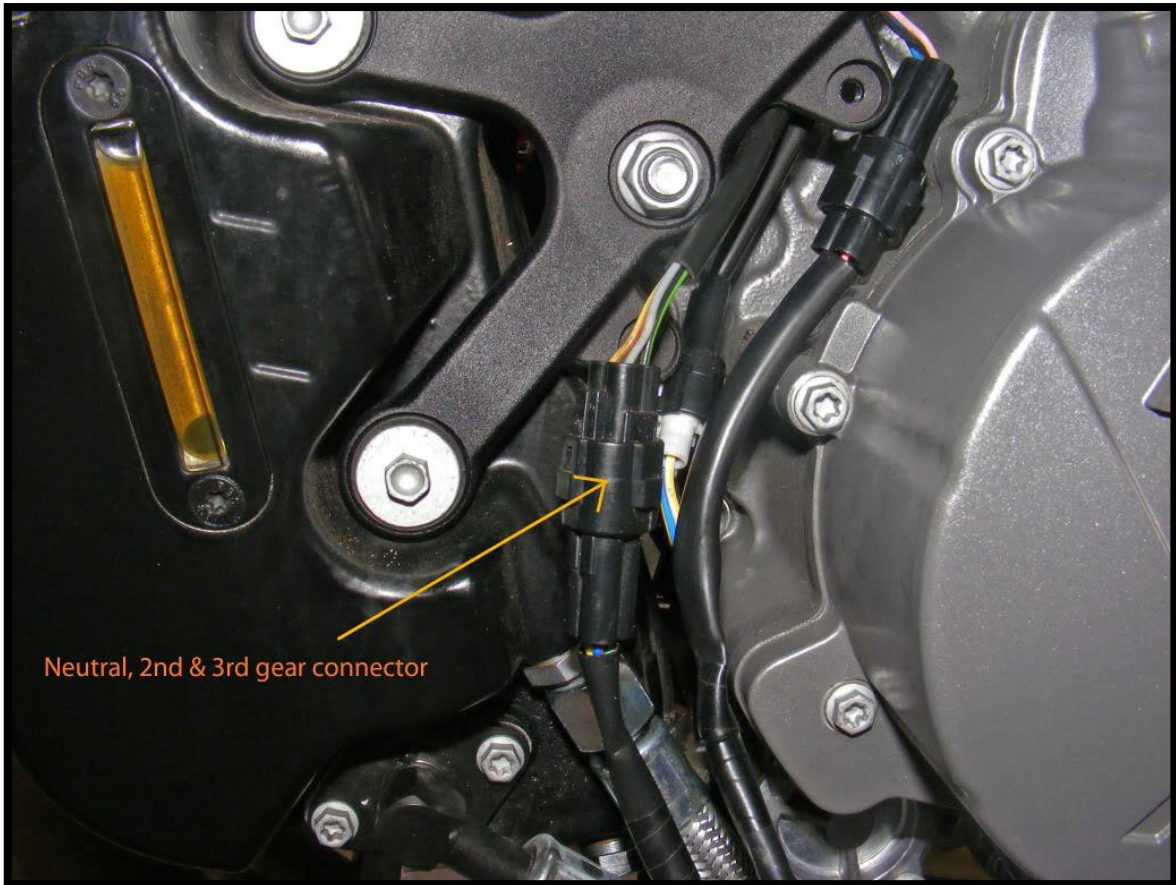
This can be done 2 ways. This mod stops the ECU from retarding the ignition timing in 2nd & 3 gears at the lower RPM's, I must admit I did not feel much improvement after doing the mod, some riders say they do.

a/ By turning them off using Tune ECU by un-ticking EPC.

Or

b/ Un-pining the wires.



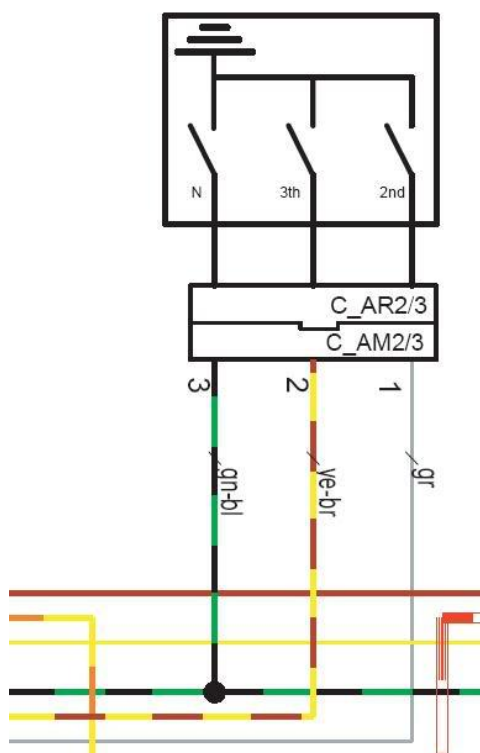






2nd & 3rd wires removed the O2 wiring connector
 Seal up the connector holes with silicone. Tape the loose wires onto the loom

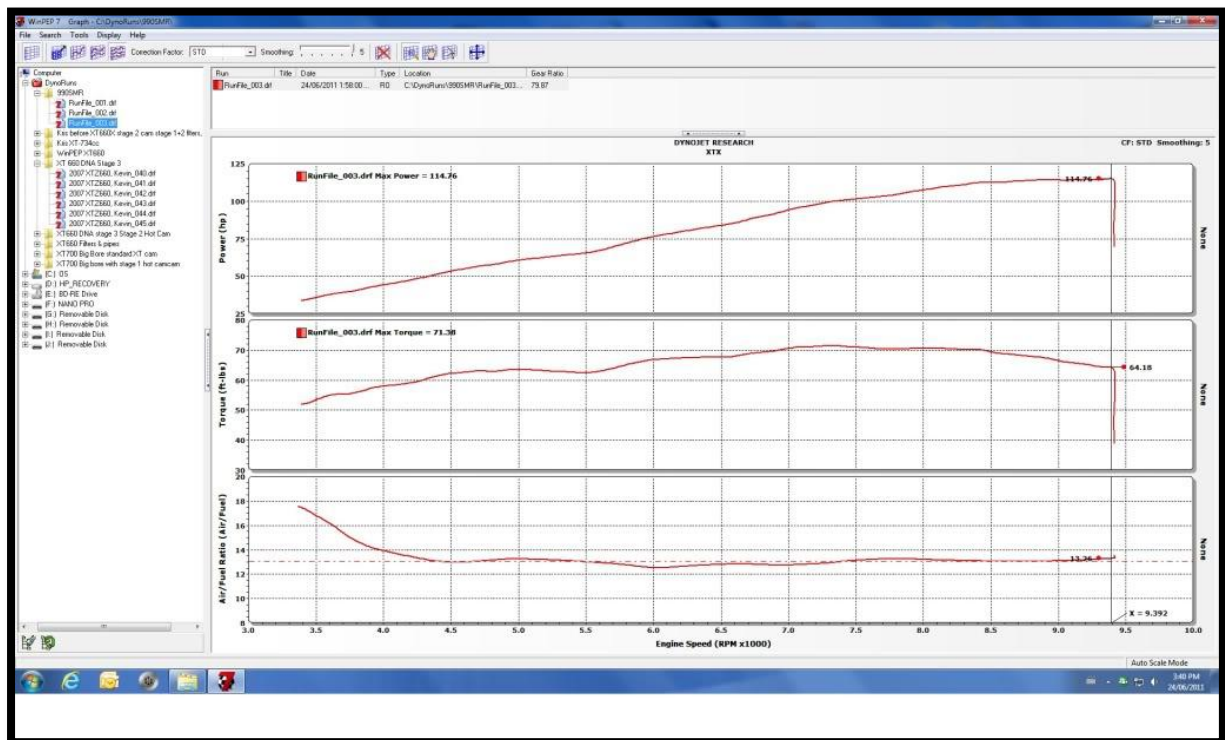
3rd gear
 neutral switch 2nd gear





5.4 ENGINE BASELINE

I started off with a base Dyno run, so I could have some hard proof of what my motor actually produced.



5.5 LEOVINCE CANS

I fitted a set of Leo Vince cans, a weight saving of 4.5kgs, with a 3.78hp at peak rpm & 3.85 FT/LBS of torque in the mid-range RPM. I used the Akra fuel map; the Akra map has a richer mixture & opens the 2nd flies sooner by a few degrees in the lower RPM's.

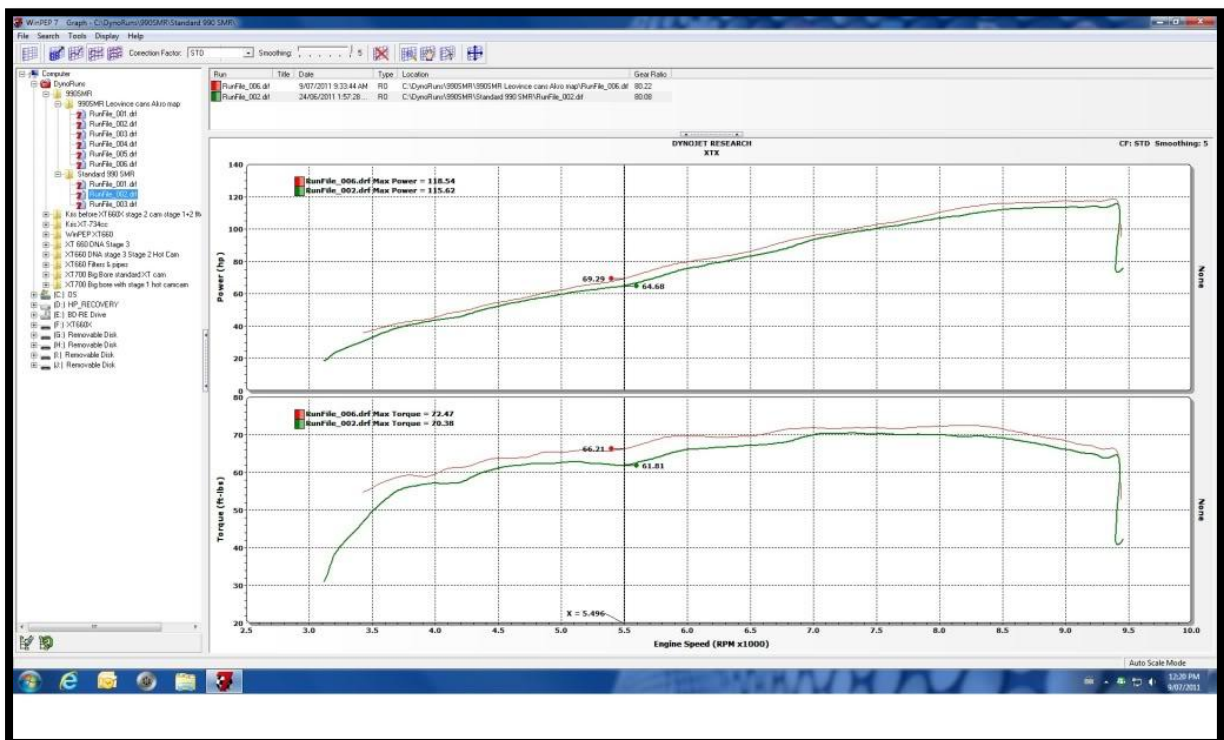


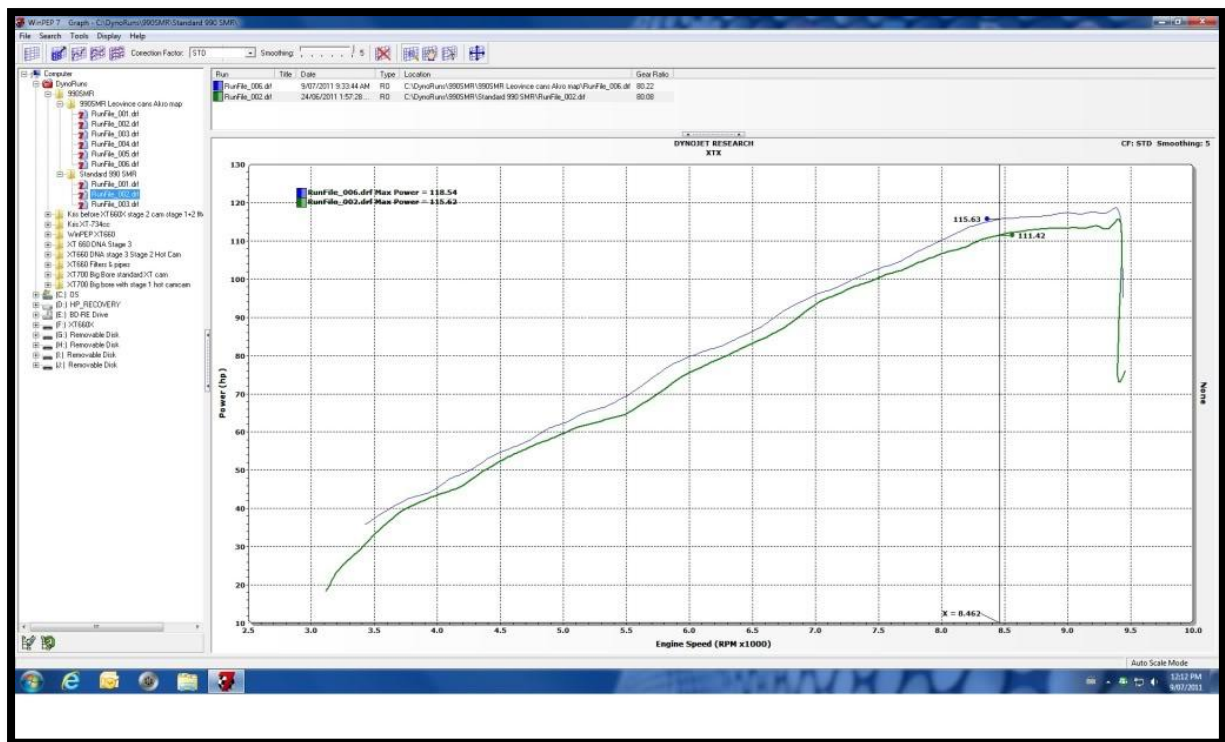


KTM



Dyno gains, standard SMR against Leovince cans fitted. Leovince run in RED





The Cops are really starting to clamp down on emission controls here in Brisbane & know of two cases where riders have had their number plates & reg plates removed off their bike & they have been sent walking with over a grand in fines & lost points. The last time I was pulled over by the cops was today breathalyzer & license check, we soon headed in the other direction for the remainder of the ride.



My answer to the problem is to fit a set of Akrapovic 0648 200 flow cats into my Leovince pipes, I run them with no O2 sensors. My good mate Kev2 machined down the outer diameter of the cats by 0.4mm to make them fit into the Leo Y pipe, I can run the pipes with or without the cats, it only takes 5 min to remove them. I can't feel any power difference when I run the cats with the baffels in on the Leo's

Copy & Paste the link below for full cat details.

[http://www.google.com.au/url?sa=t&rct=j&q=akrapovic%200648%20cat&source=web&cd=1&cad=rja&ved=0CEQQFjAA&url=http%3A%2F%2Fakrapovic.de%2Fmain%2Fabe%2Fupload%2FPKAT010%2520-%2520e1%25200648%2520\(5\).pdf&ei=e95KULqKH4yOmQXL84DIBQ&usg=AFQjCNEM2LhIVQ4guSzJeuGk1BOgJzqbXQ](http://www.google.com.au/url?sa=t&rct=j&q=akrapovic%200648%20cat&source=web&cd=1&cad=rja&ved=0CEQQFjAA&url=http%3A%2F%2Fakrapovic.de%2Fmain%2Fabe%2Fupload%2FPKAT010%2520-%2520e1%25200648%2520(5).pdf&ei=e95KULqKH4yOmQXL84DIBQ&usg=AFQjCNEM2LhIVQ4guSzJeuGk1BOgJzqbXQ)

[http://www.akrapovic.com/en/Motorcycle/ ... +converter](http://www.akrapovic.com/en/Motorcycle/...+converter)





KTM



KTM



KTM



5.6 2ND FLIES & SHAFTS REMOVAL

Effects, much smoother in the lower RPM's, less compression braking on over run when the throttle is closed, great mod. A 5.02 HP gain at peak RPM, 3.43 FT/LBS of extra torque at 8100rpm. I had the Akra map loaded with the 2nd flies turned off. I recommend this mod big time.

After doing some reading on the gains to be had from removing the 2nd throttles I decided to give it a go to see for myself it was worth the trouble. I can tell you I was quite surprised how well the bike goes with them removed, this mod well worth doing. The bike is so much smoother on / off the throttle & this mod does produce much better pull across the whole throttle range.

I will be back on the Dyno this coming week & will post a before & after Dyno runs to see the gains.

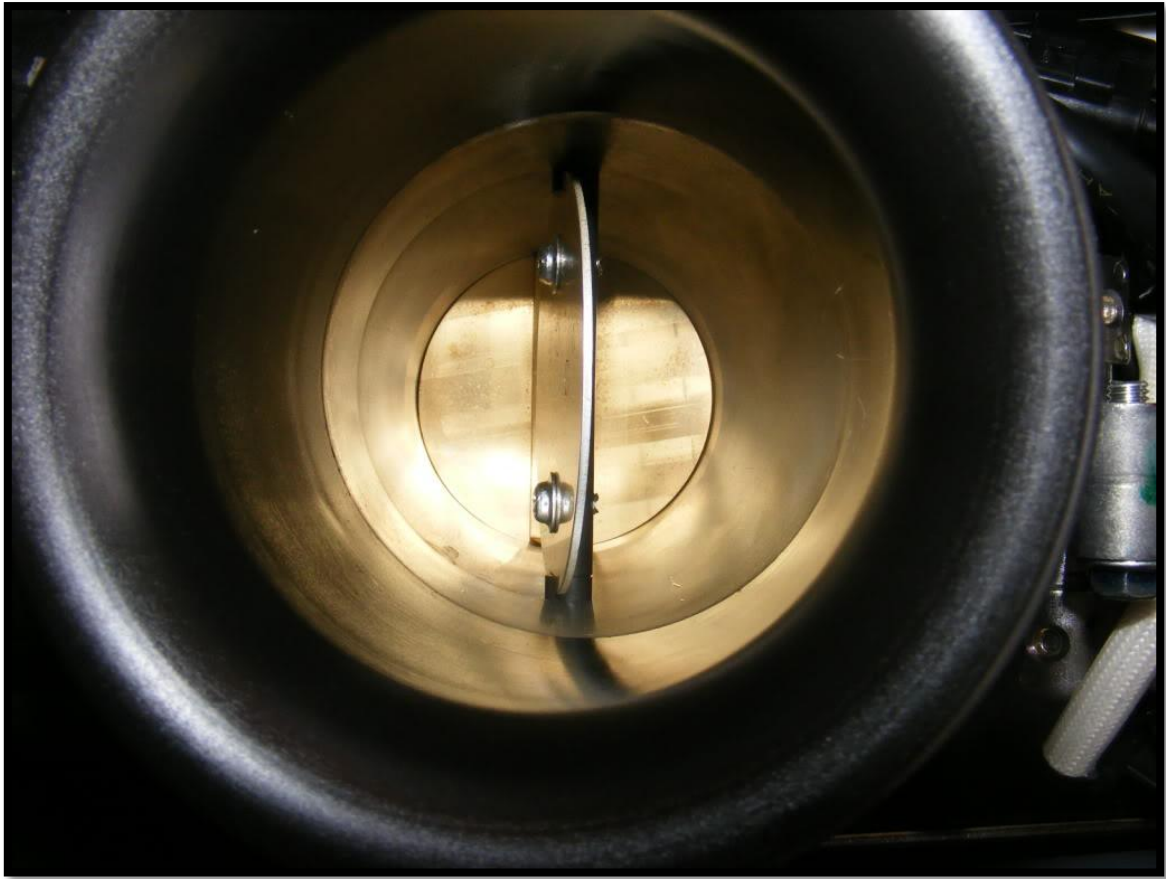
I first turned off the 2nd valves using Tune ECU.

Looking down the throttle with the 2nd valve wide open you can see the air flow is not good, these 2nd valves do not open up all the way & direct the air flow into the wall of the throttle body which will cause slower air speed.



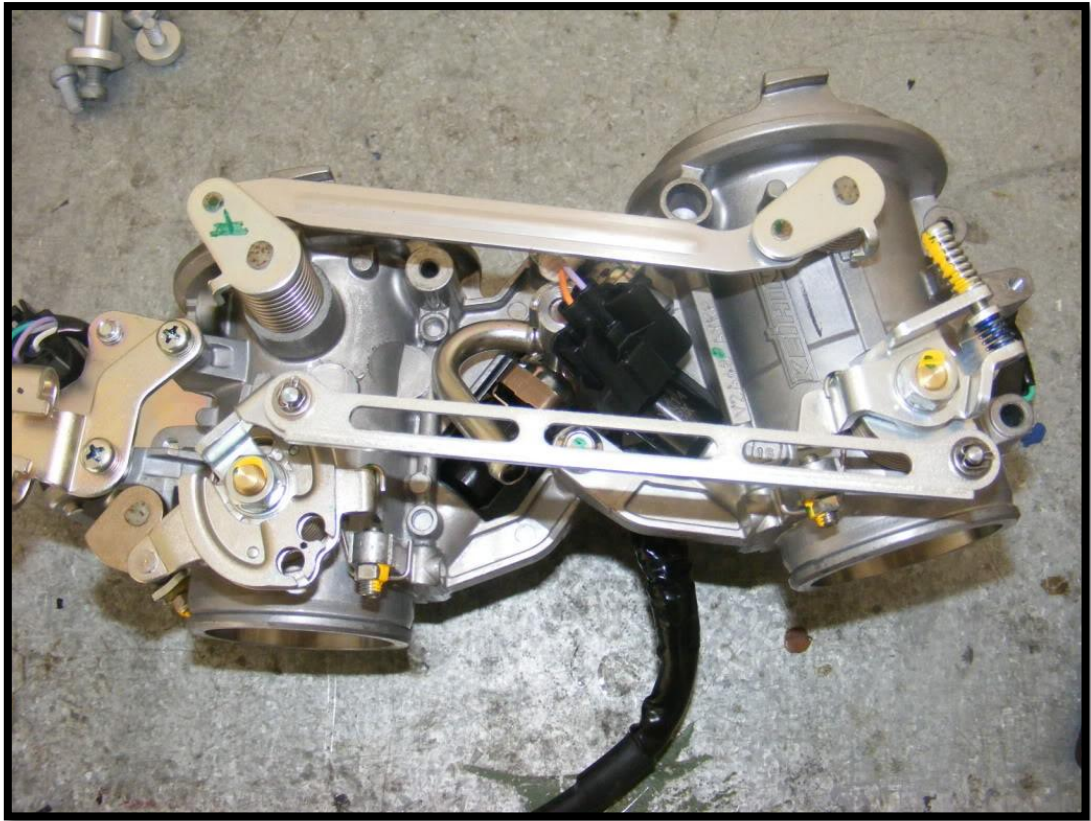


KTM

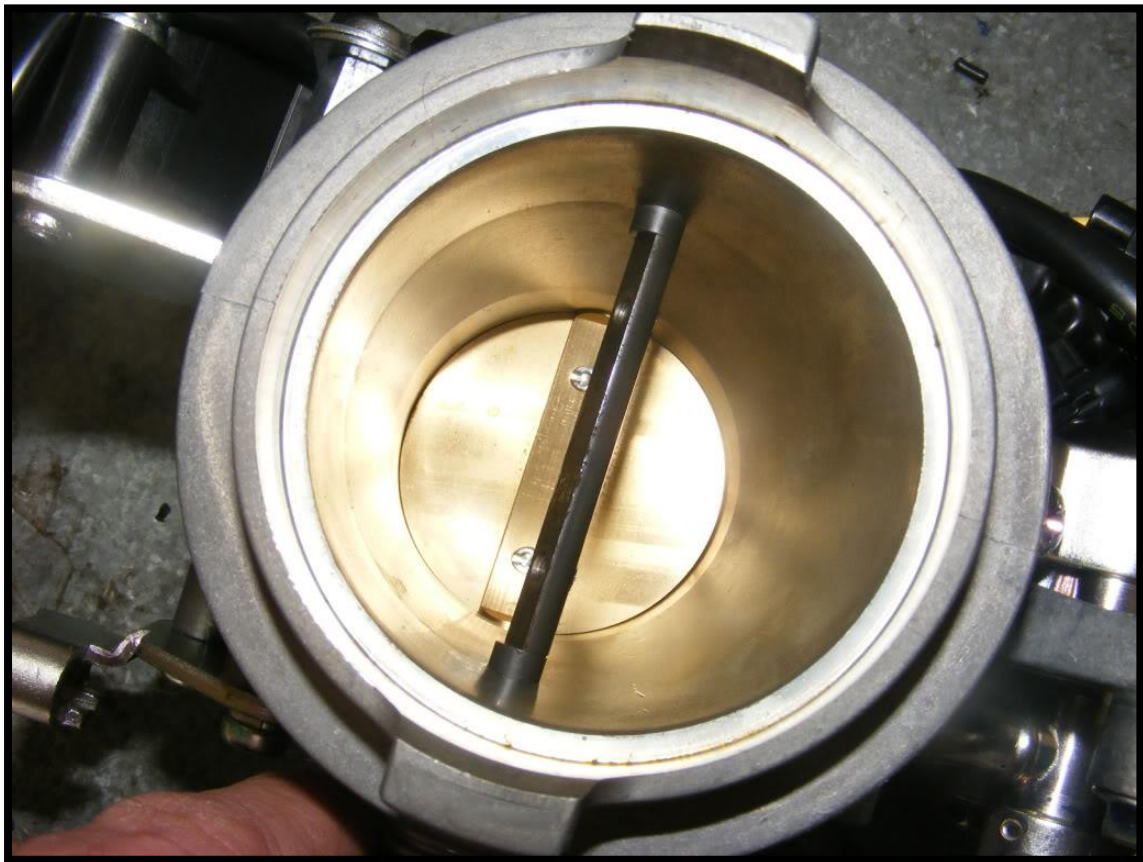
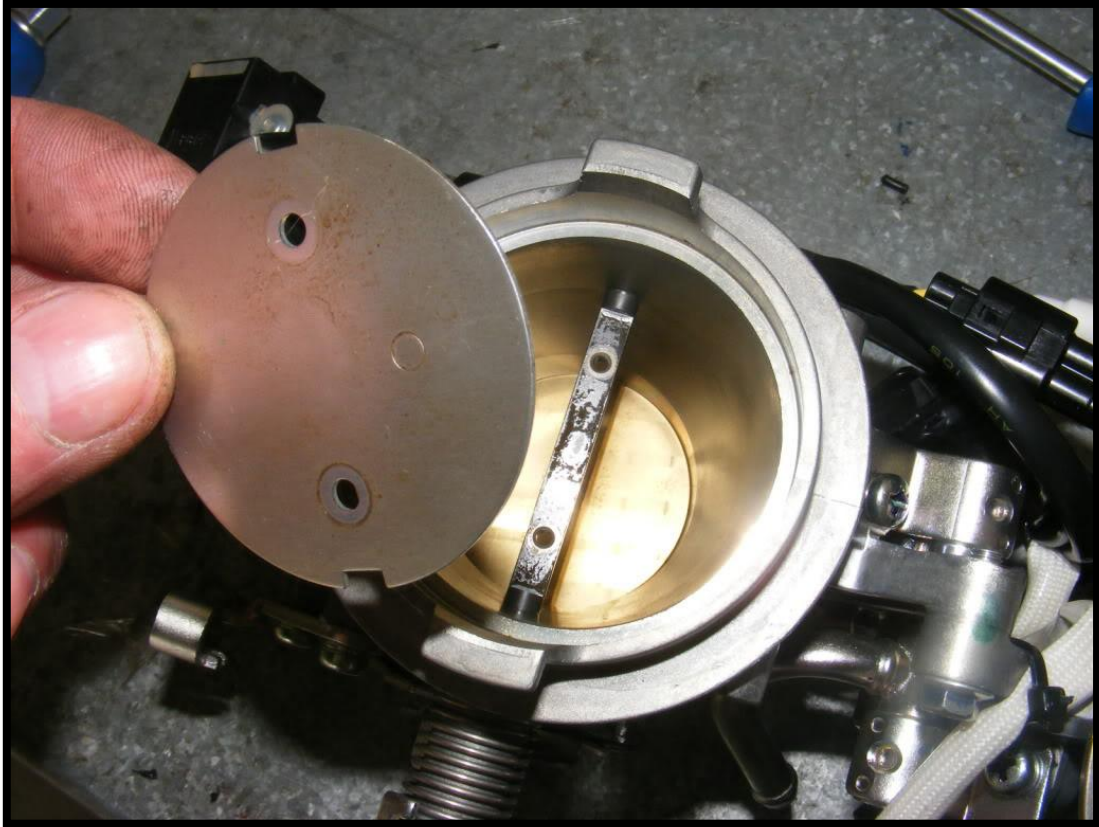


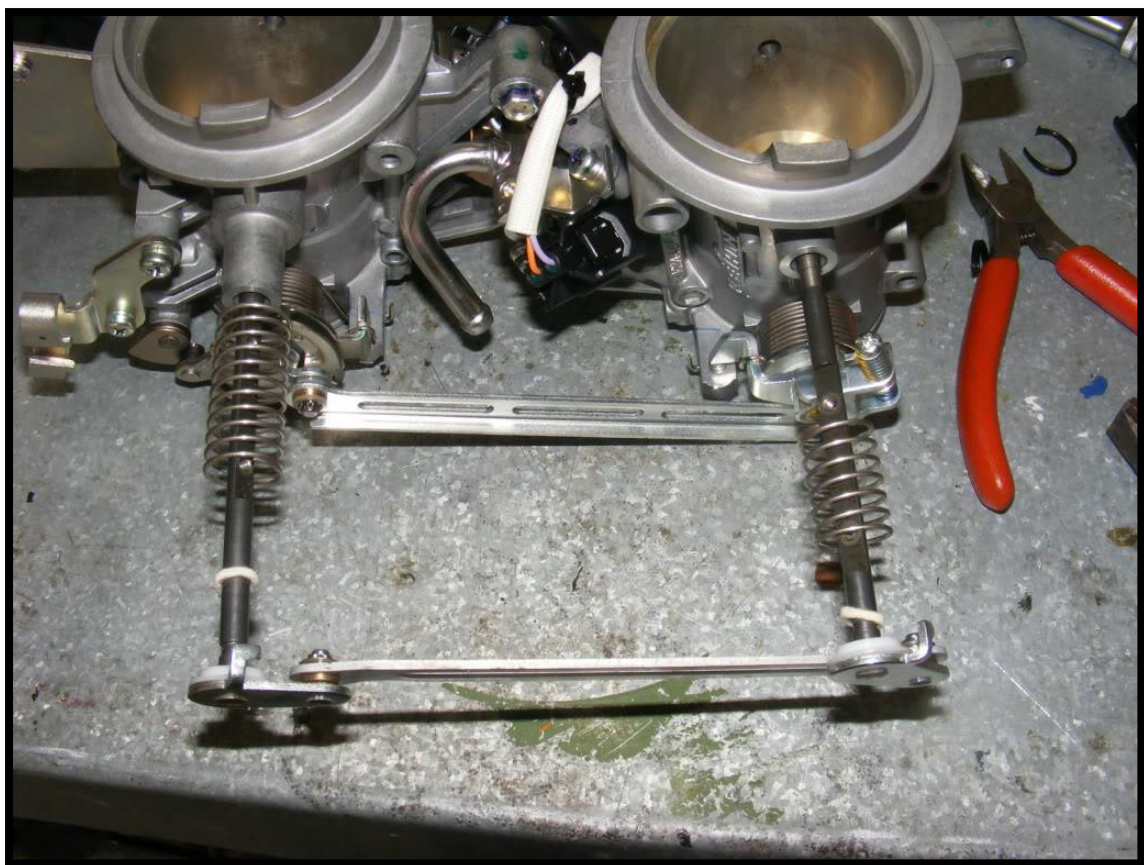
KTM

I removed the tank, removed the top of the air box & filter, removed the throttle bodies.

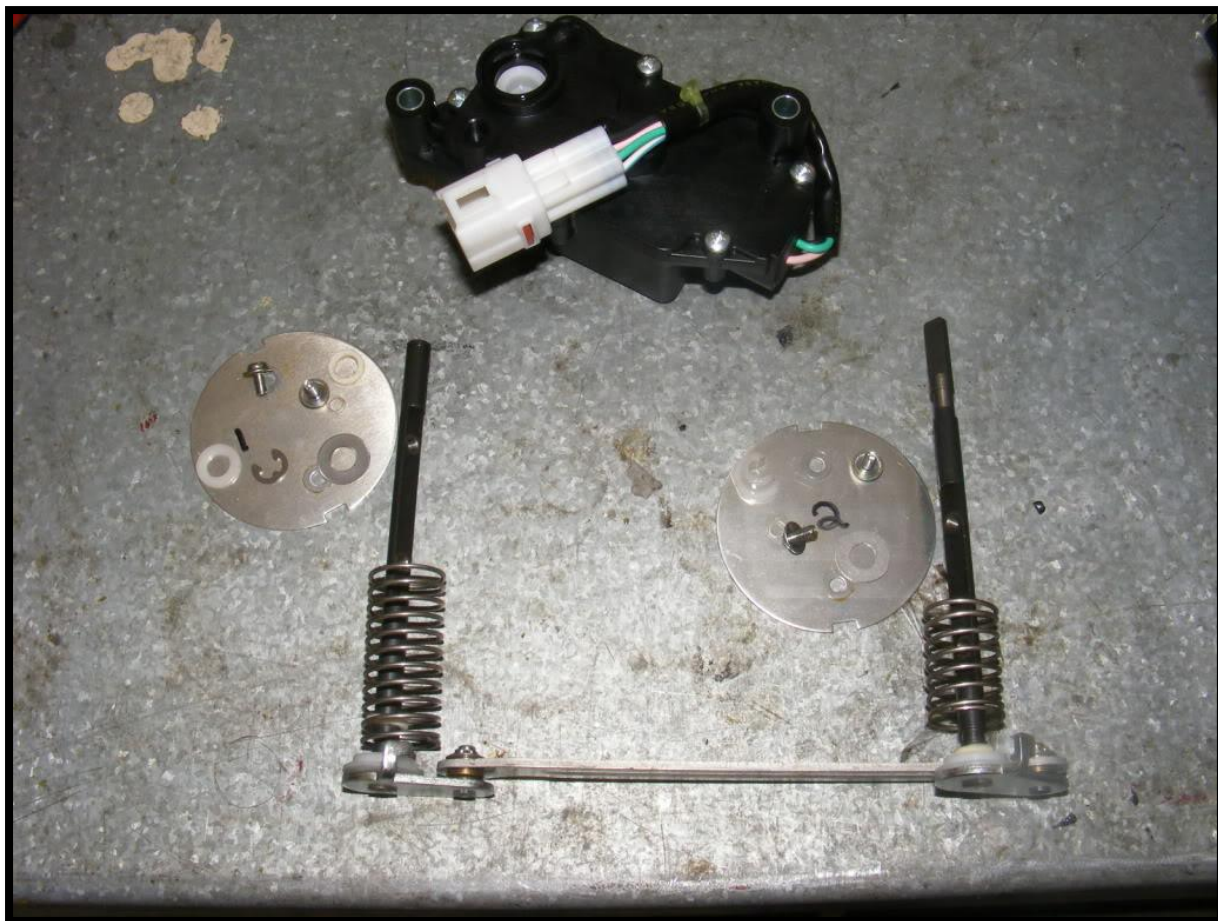


I removed the 2nd throttle motor, TPS, throttle plates & shafts.





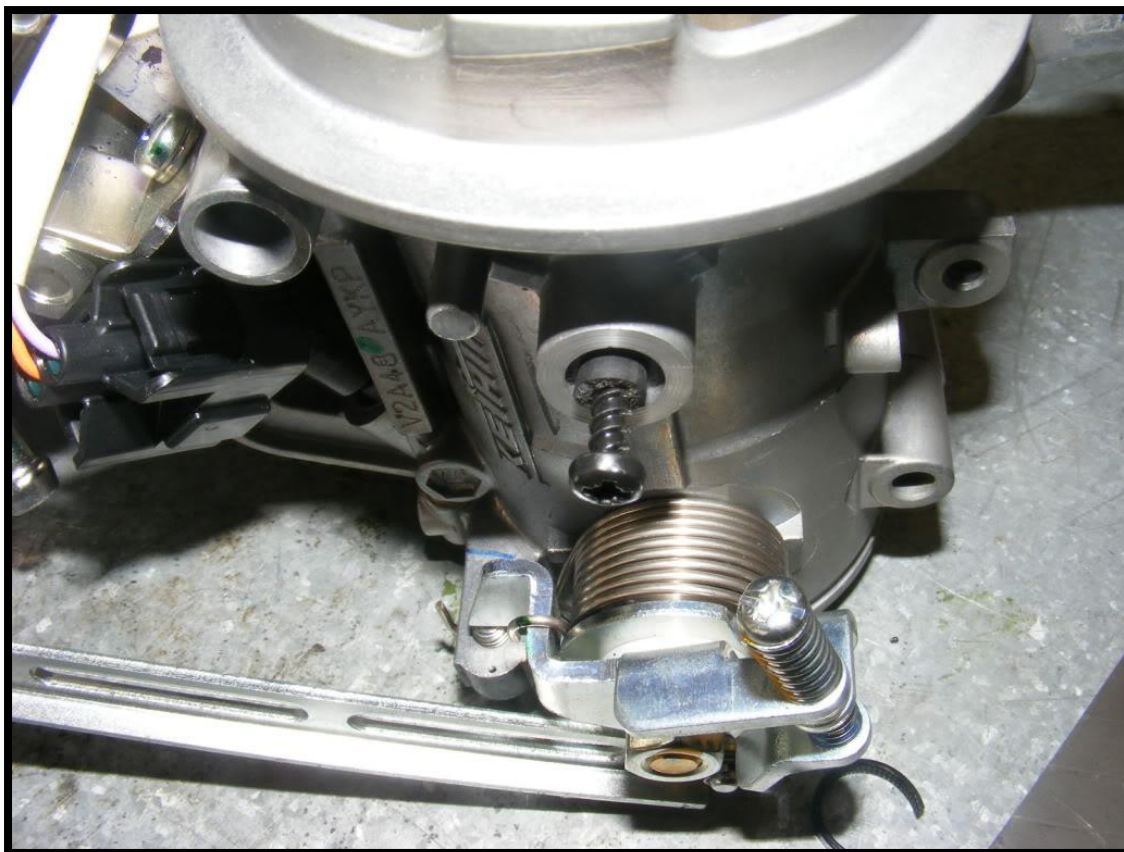
KTM



I then used 5mm OD rubber vacuum pipe with a self tapping screw to expand the rubber tube in the shafts holes to block them off.



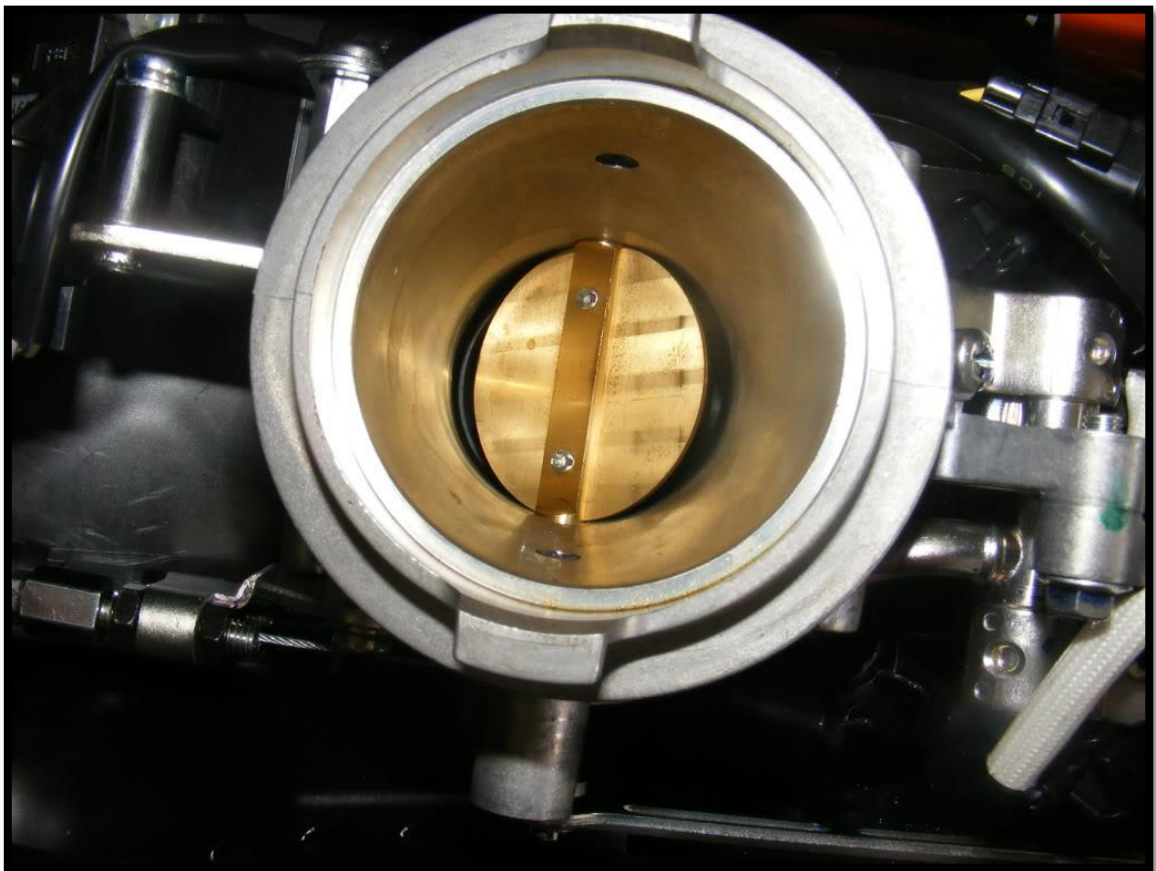
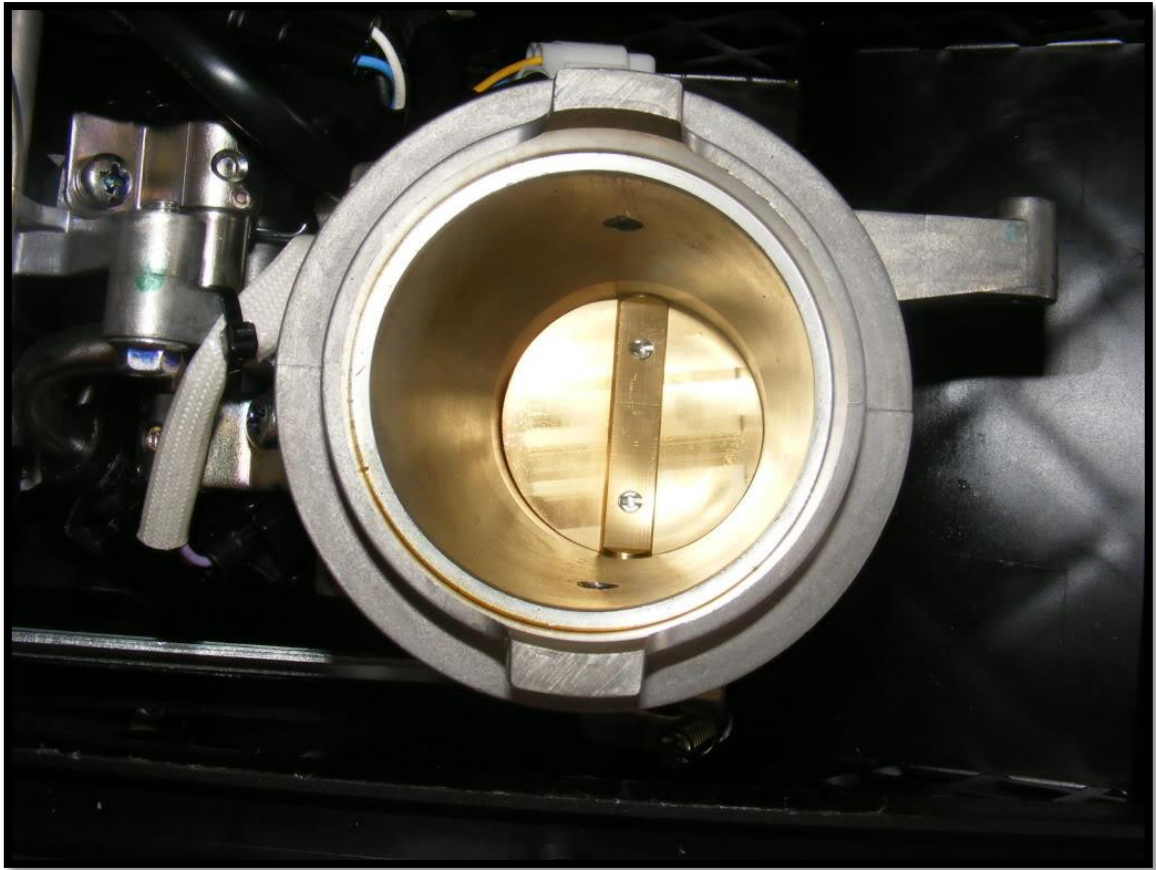




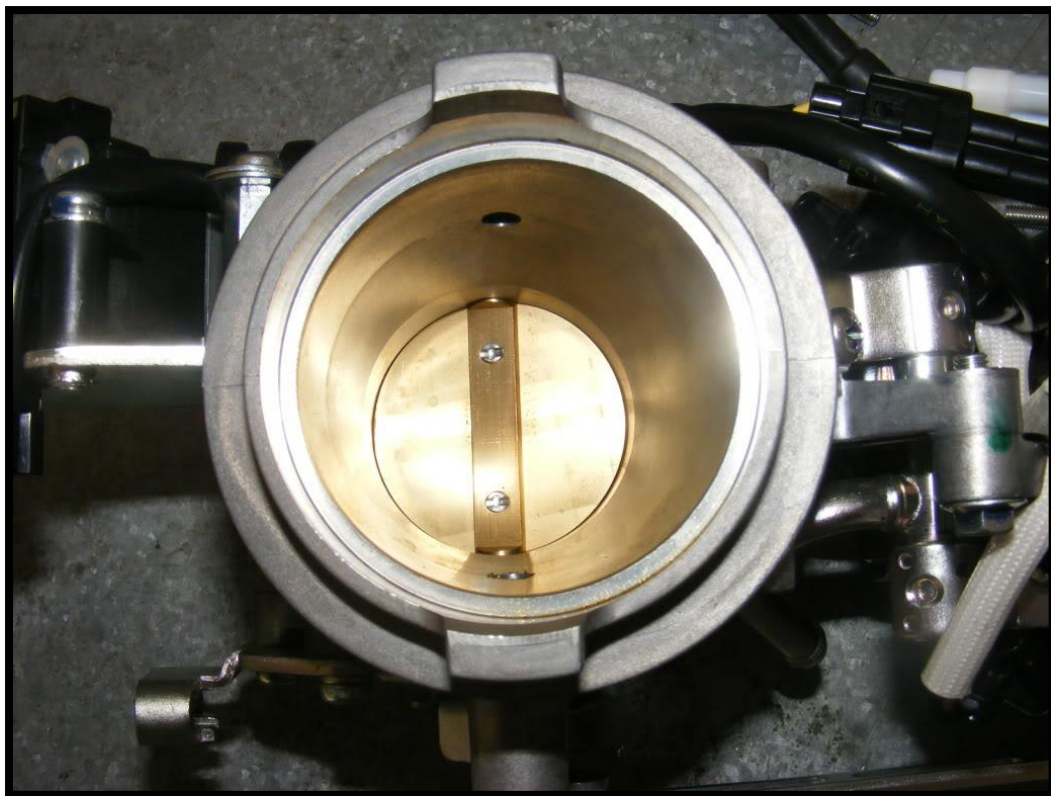


Looks much better, much more direct air flow.





KTM



KTM

BEFORE



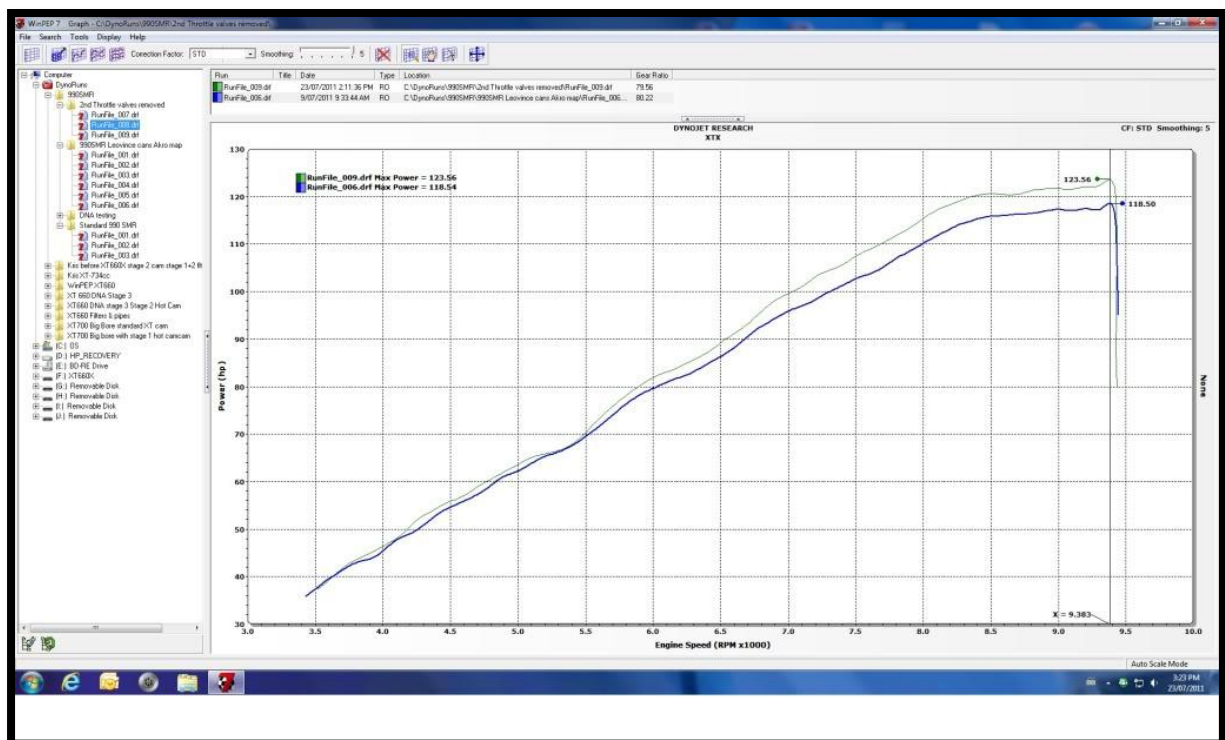
AFTER



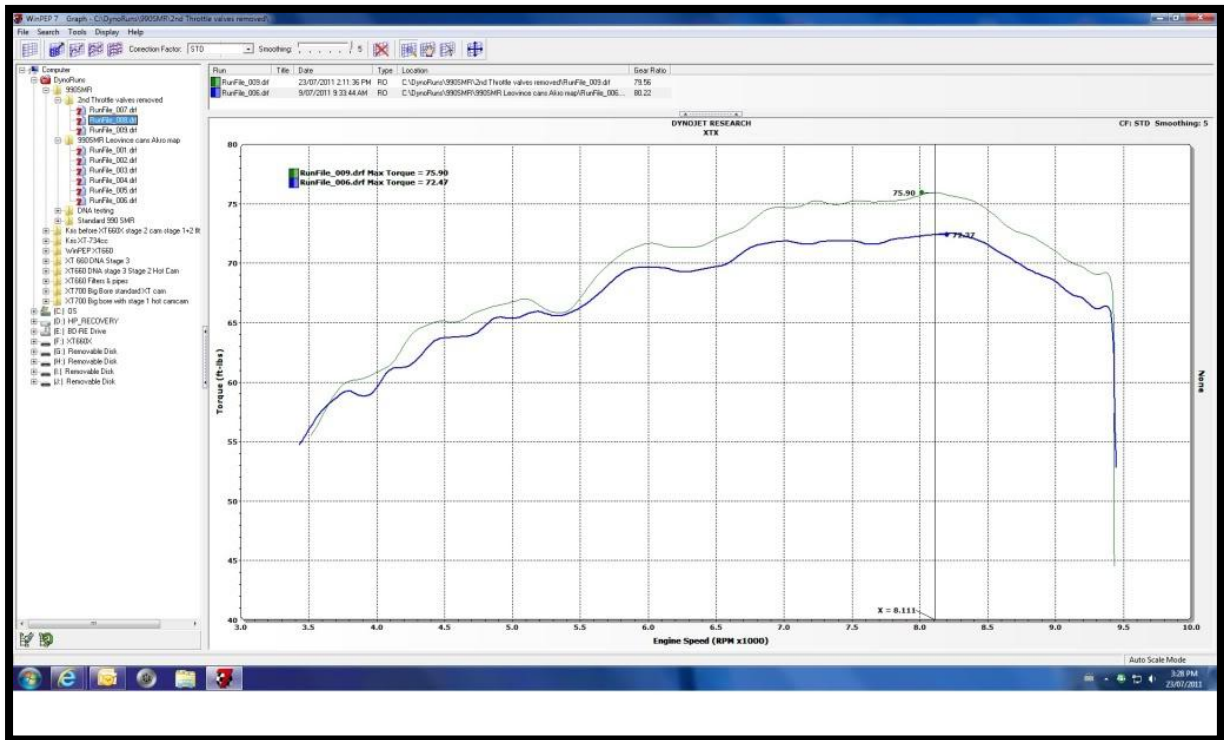
OK I was back on the Dyno testing the effects of removing just the 2nd flies & shafts there was no map change. There was a nice gain more that I thought, if you are going to do this mod it will require a retune as the A/F ratio was very rich from 4300 rpm all the way through because of the lower air speed from the removed flies, I know I can pick up a few more HP with extra torque from 4300 rpm all the way through if I leaned the map out. The fuel map is the Akra map for SMR 2011 with Flies turned off.

I would have made a new fuel map today but did not as I will be testing the DNA air box on my SMR very soon & will do a complete remap to suit all my mods.

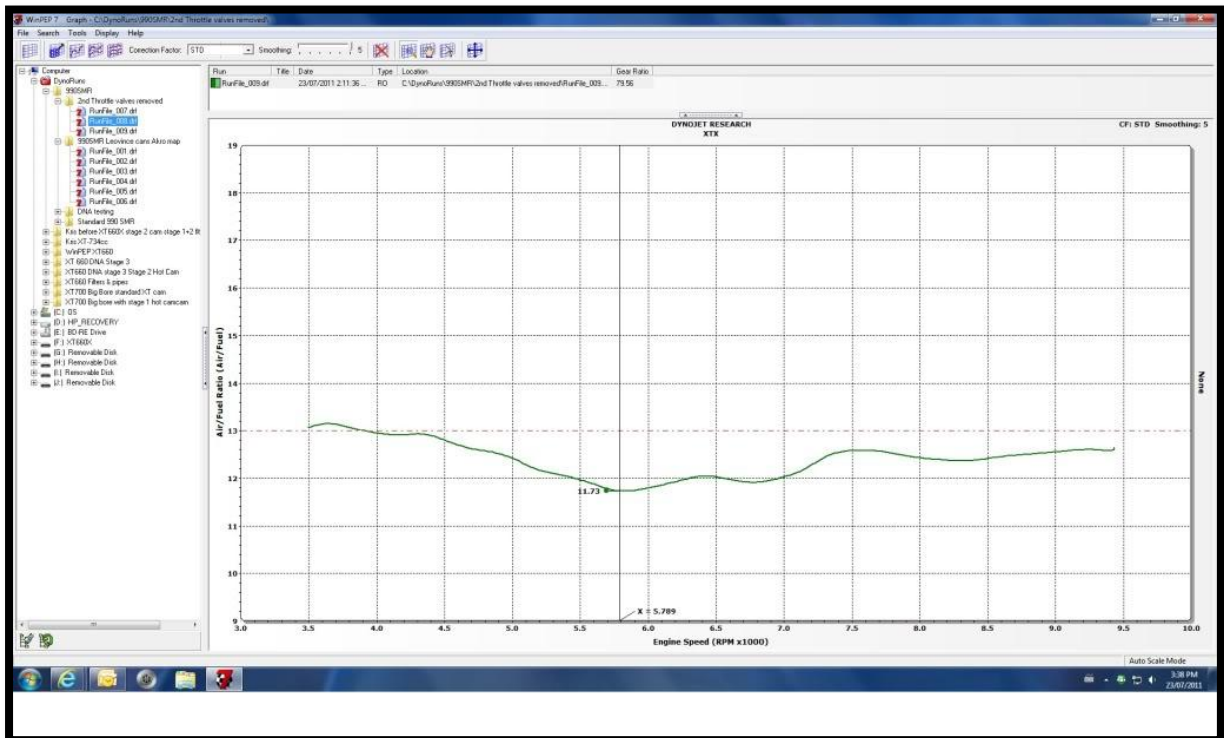
HP. (Before = Blue line, After = Green line)



Torque



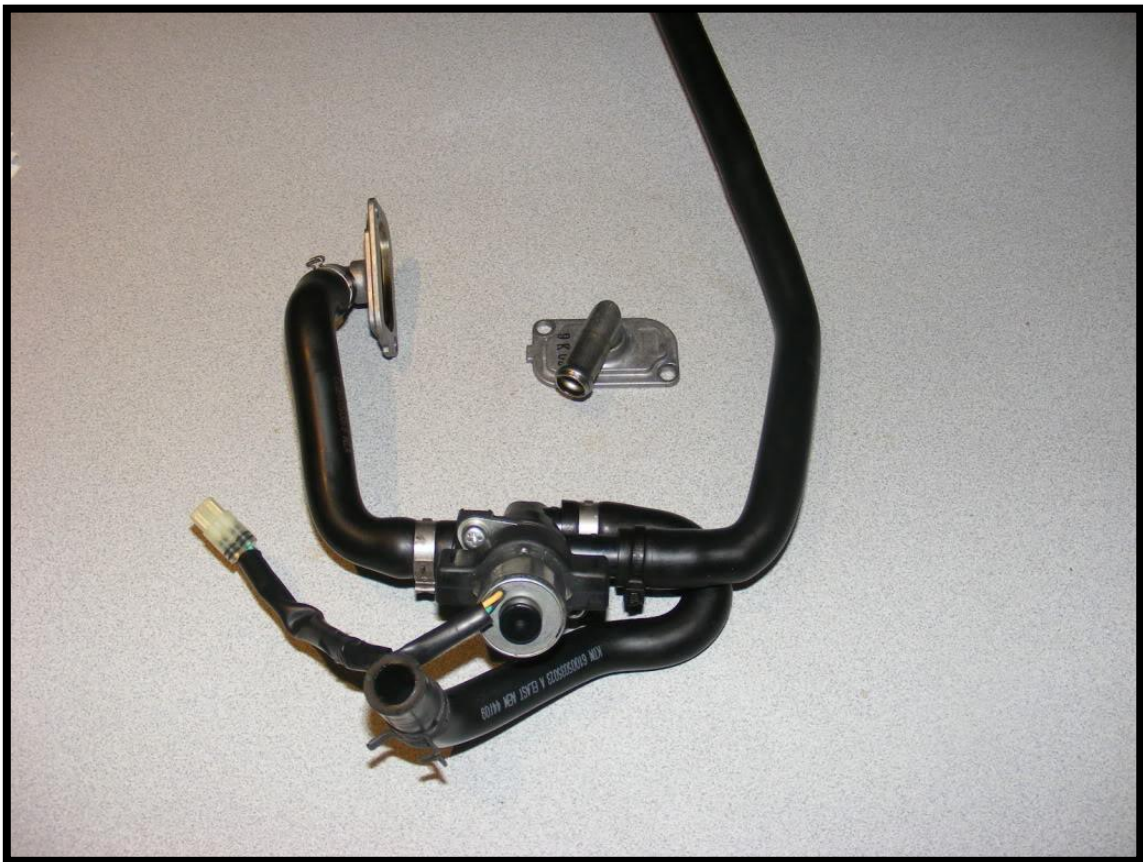
A/F ratio with just the flies & shafts removed, way to rich.



5.7 REMOVING THE SAS SYSTEM

I also removed my SAS system, fit my own plates homemade plates & turned off the SAS with Tune ECU. This mod is done when fitting after market pipes, your pipes will run a little cooler with this mod. There is no HP gain from this mod.





KTM

5.8 STM SLIPPER CLUTCH

I love this clutch, it works so well, with no clutch noise & feels exactly the same as the OEM clutch, except on the over run when you can feel the slipper clutch intervening on hard down shifting. For my style of riding it has made the bike so much safer to ride. The rear suspension also reacts for the better with the slipper clutch. The complete slipper clutch was 350g lighter than the complete SMR clutch, so a bit of weight saving there especially with centrifugal force.





KTM

5.9 2ND COOLING FAN

I did this mod as I live in a hot area of Australia. The 2 fans run for less time when activated & there is now more air flowing through the radiator cowling with the 2 fan in place & the fans seem to be less active after doing this mod, this mod does make the bike run cooler it make the cooling system recover quicker when the fan runs.

Living in a hot climate I am worried about how long the radiator fan runs for, so I made up a 2nd fan to run at the same time as the main fan, this will allow the cooling system to cool down quicker each time the fan runs.

I bought one of these fans from this guys.

<http://www.ebay.com.au/itm/190557264240>

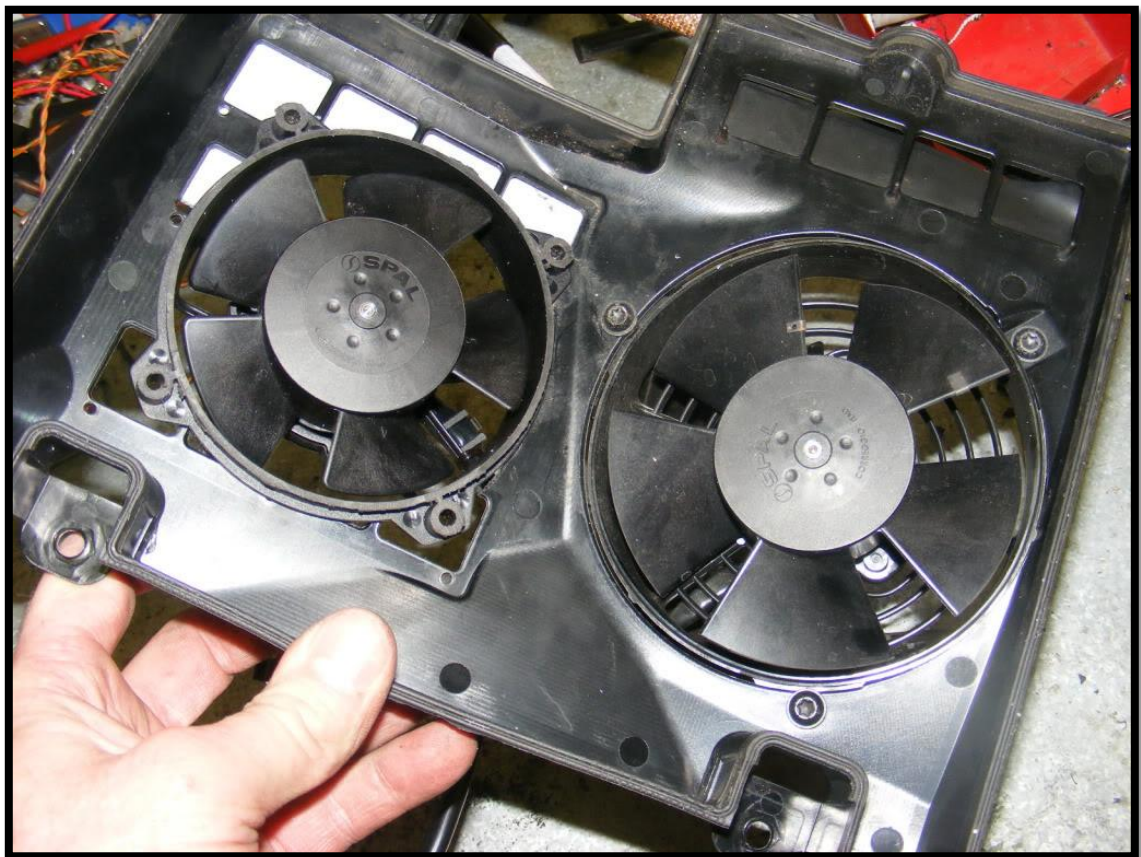
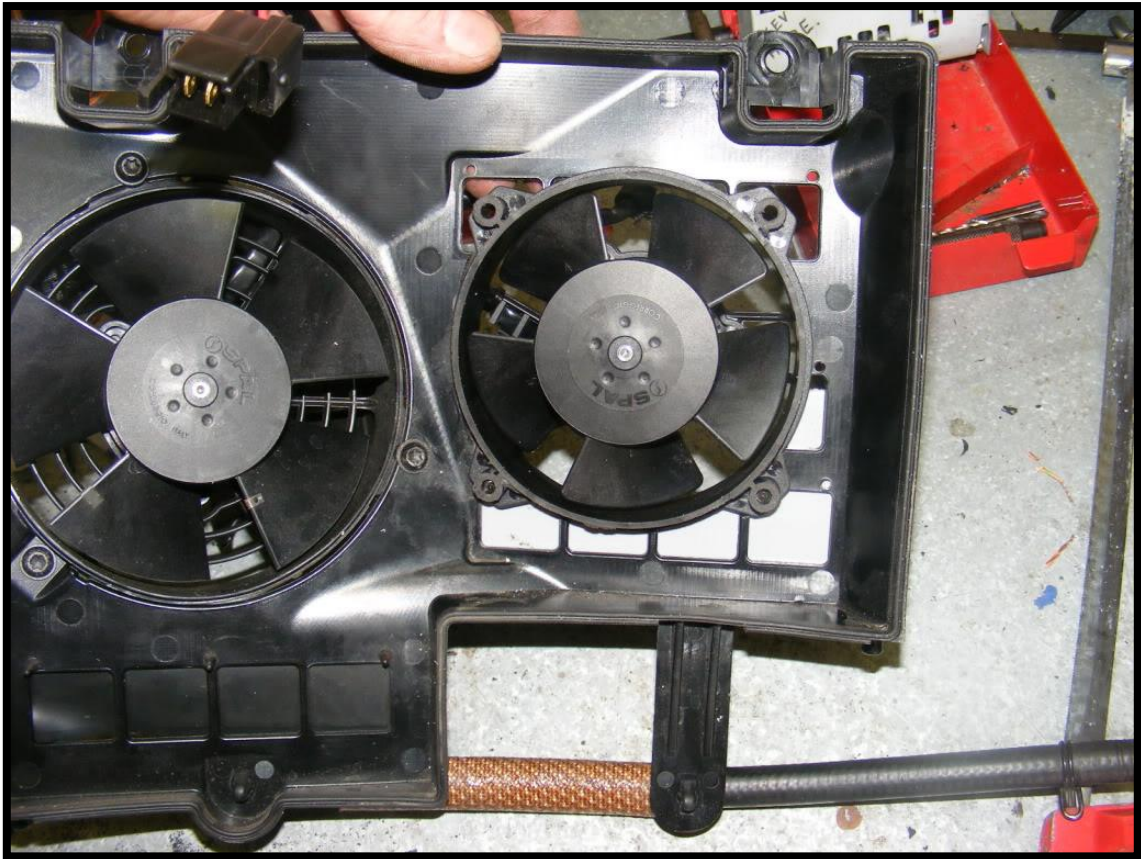
Fan spec's

[http://www.spalautomotive.co.uk/acatalo ... -62A-S.pdf](http://www.spalautomotive.co.uk/acatalo...-62A-S.pdf)

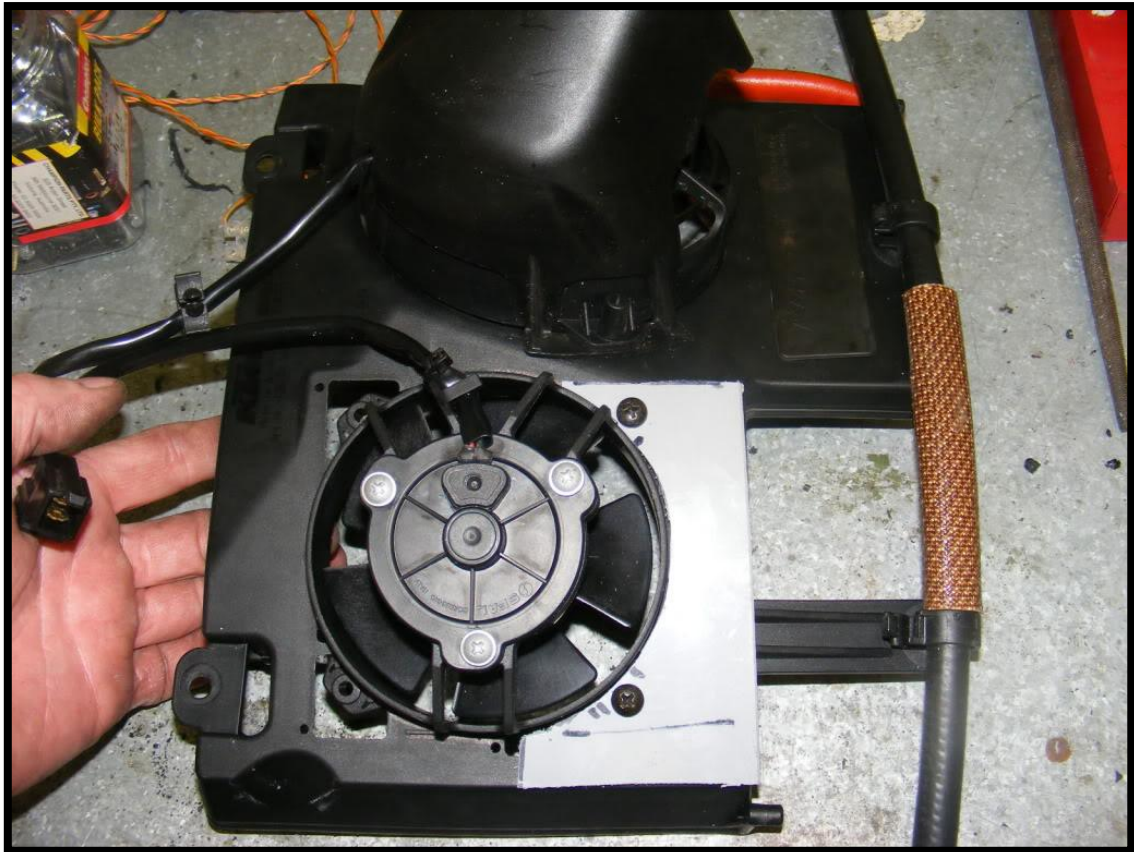


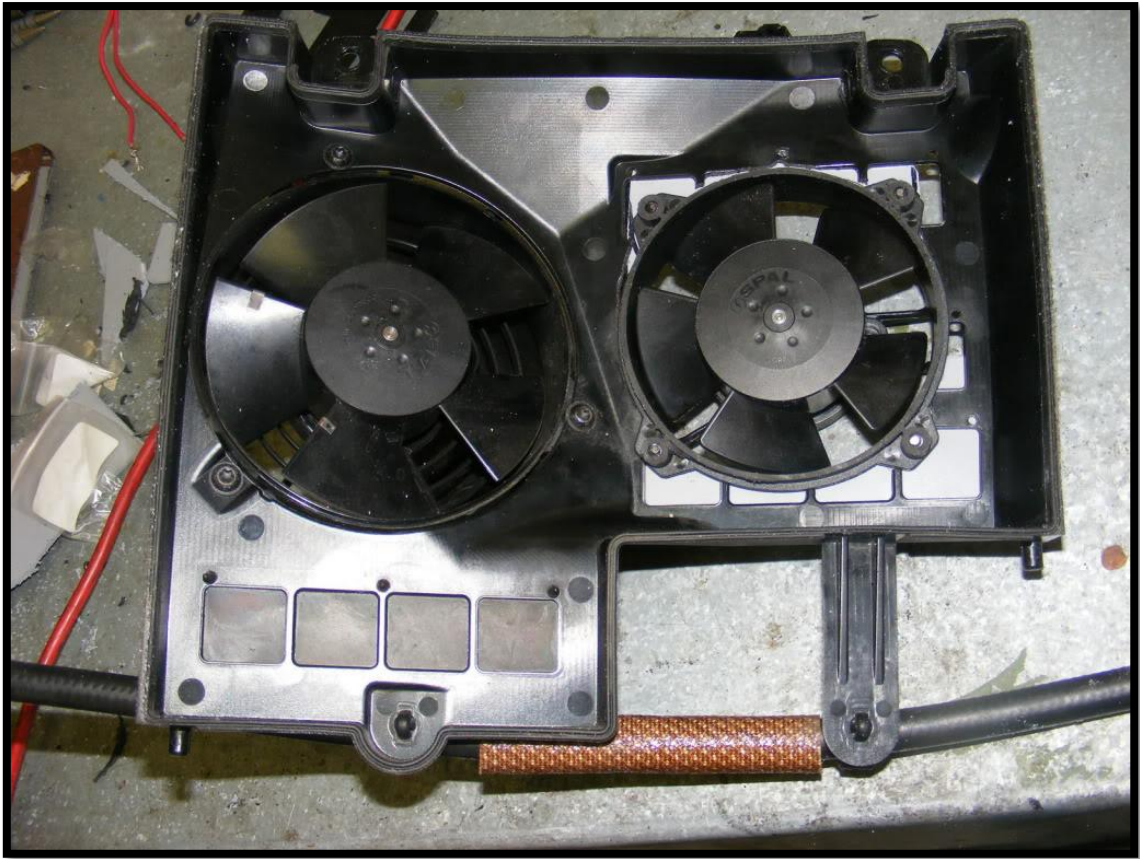


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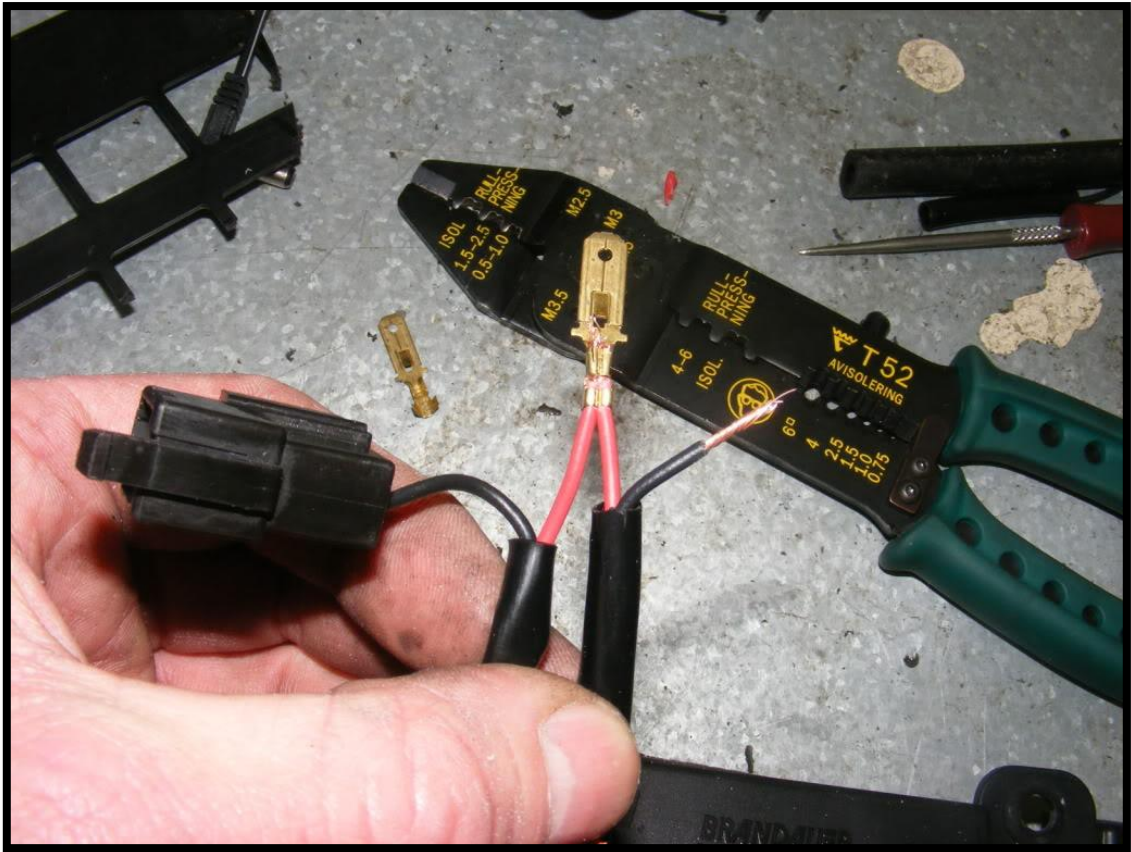


KTM





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I will finish off the fan this weekend with a coat of black paint & a shroud to direct the air away from the air box & motor.

5.10DNA AIR BOXES

I ordered all 3 so I could test them to see which one gave the best HP & Torque for my bike. A great piece of kit well made with a 1000g saving in weight. The gains from the air box are well worth the money in my eyes & did I mention the intake sound, amazing. The DNA Air box can be fitted over the top of the KTM's bottom half of it's box, or you can remove the whole KTM air box as I did.

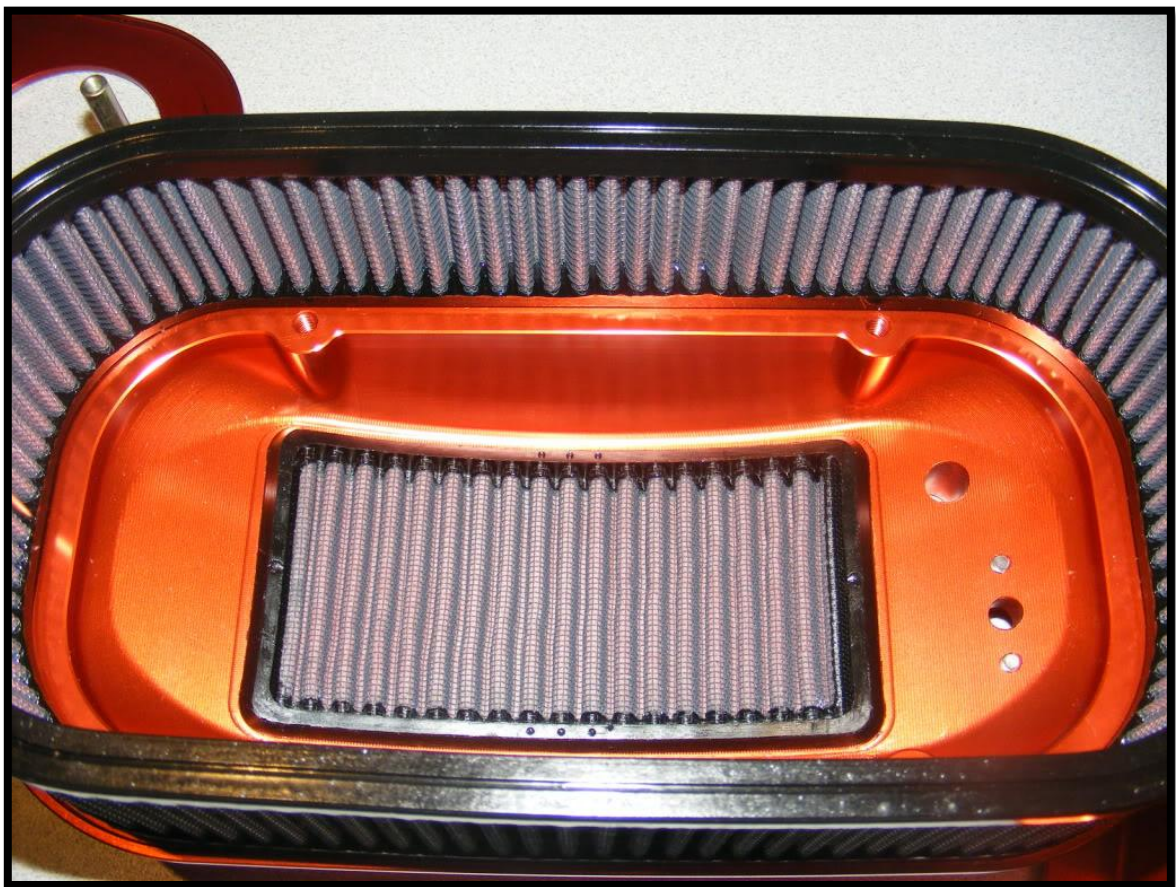
I have not posted any Dyno runs for the air box, as I have been waiting for my PCV which I will have next week 12.10.2011 & will build a custom dyno map using Tune Link & will post the results on the forum. I have done some power runs with the MK3 & the air box has given more HP & Torque across the whole rev range.





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I fitted the DNA MK3 air box this morning & only have one to say, bloody hell this bike now pulls like a train, this air box exceeded my expectations. I will build a temporary fuel map using my Wide Band data logger / Tune ECU & get a quick power run to see the gains. When my PCV arrives I will get a proper fuel map made using Tune Link on the Dyno & do comparison runs with the different tops.

One good bit of news is you can fit this air box over the top of the lower half of the existing SMR's air box, this makes fitting the new air box dead easy if you don't want to remove the complete air box.





KTM

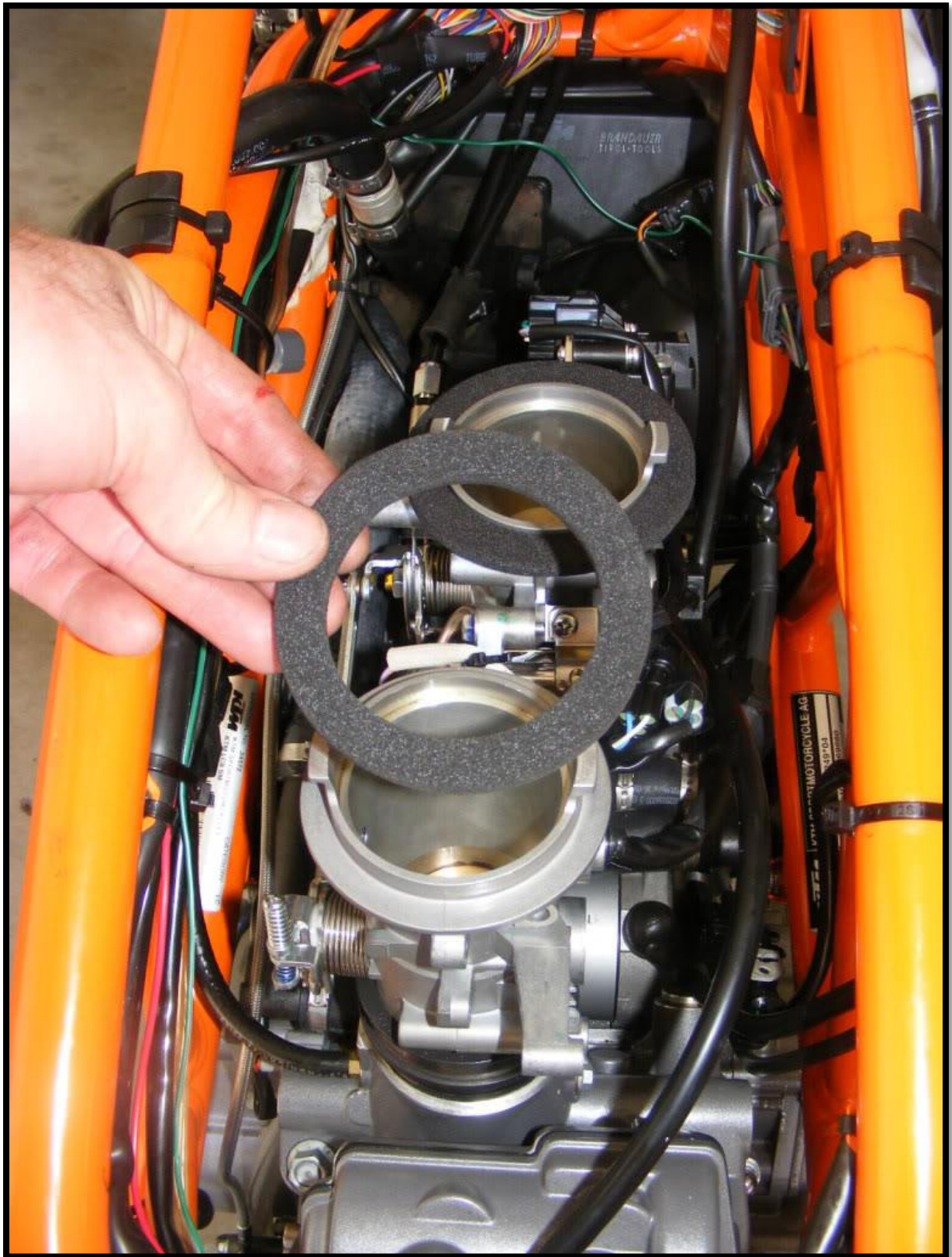


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I removed the complete air box for extra cooling around the motor.





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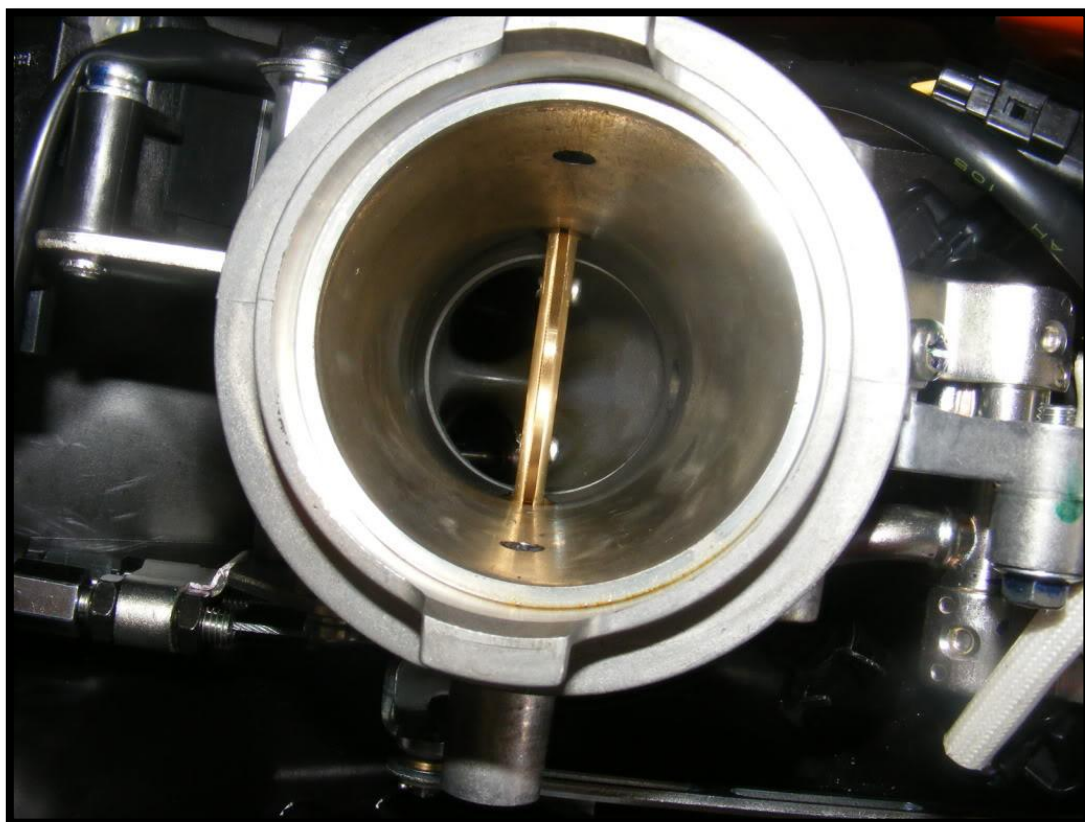
KTM



I also cut the step out in the intake ports with a die grinder for better flow. If you look carefully you will see the silver step sticking out in the intake path.

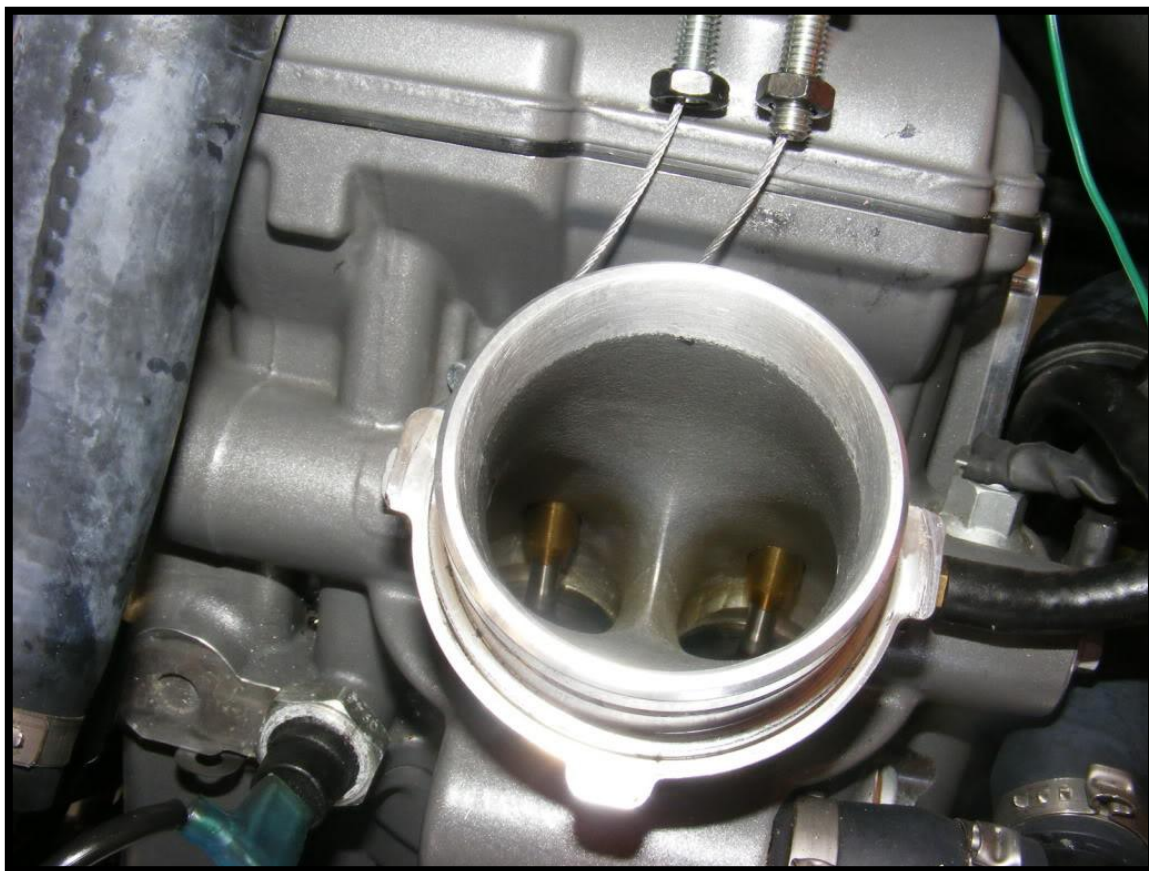


Before

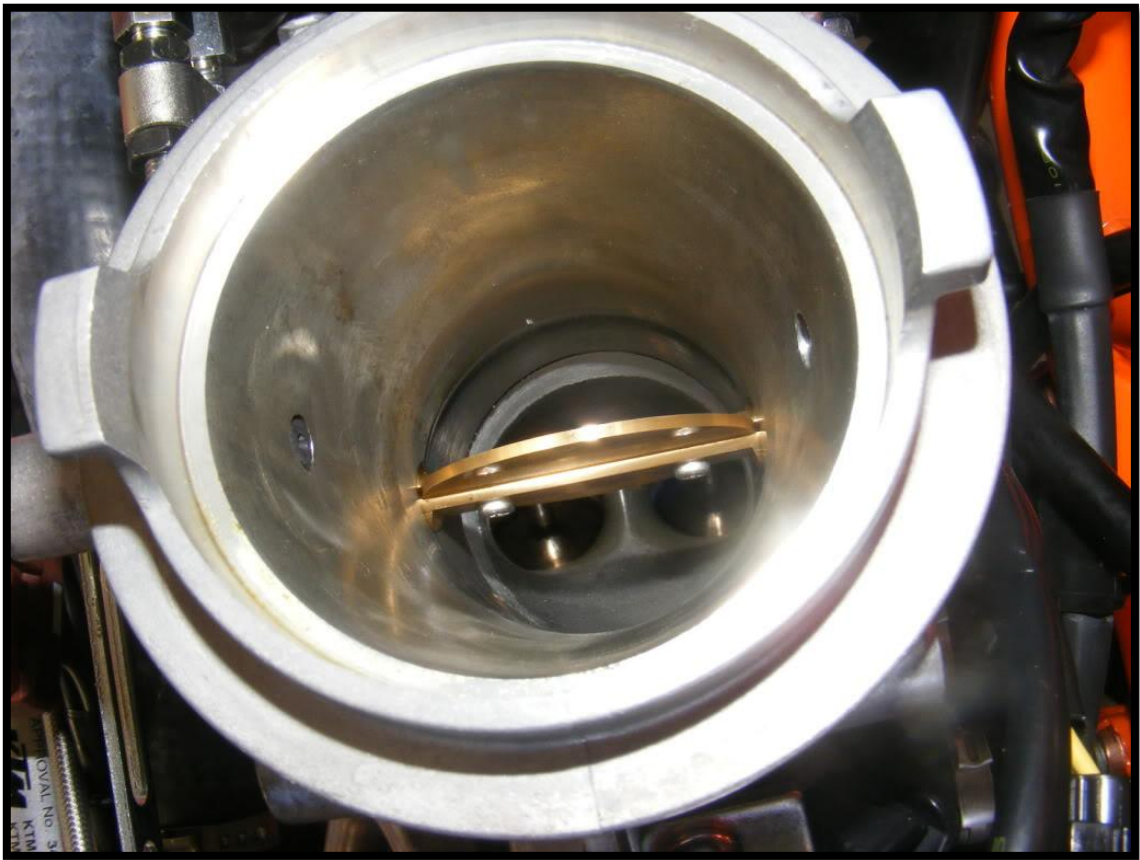
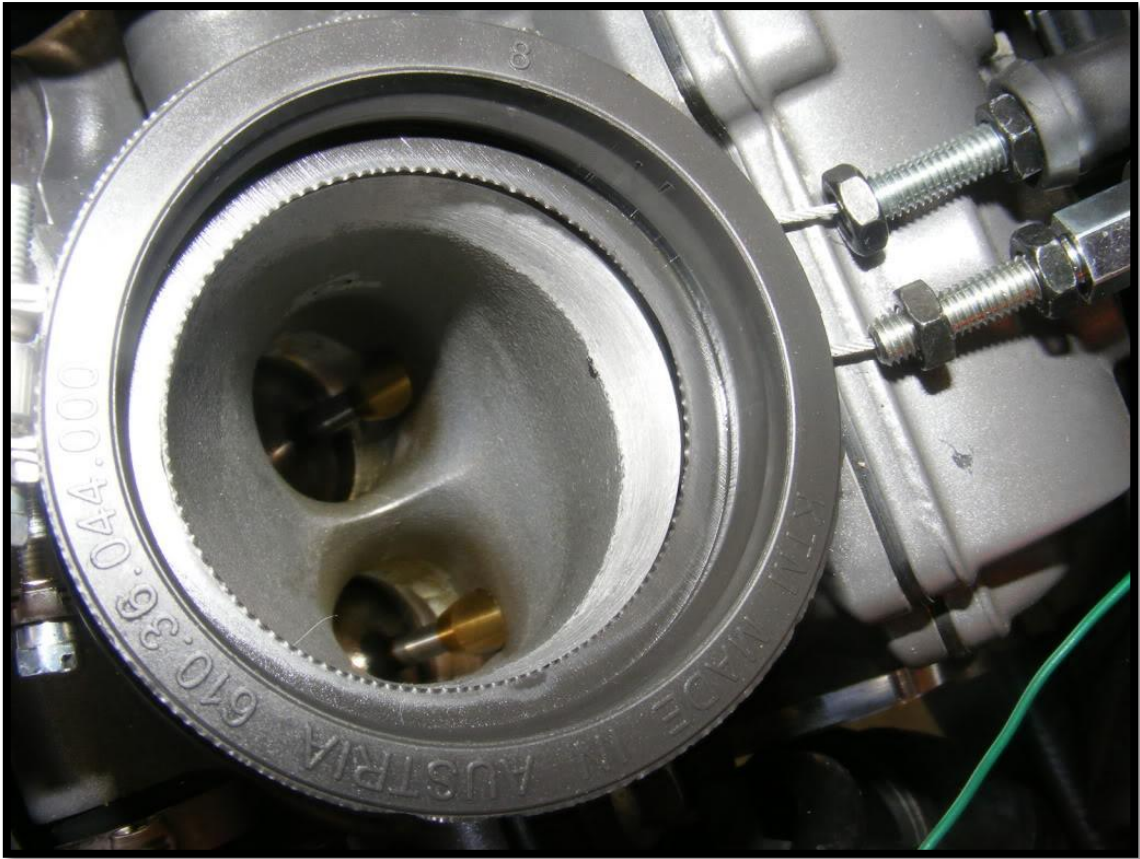




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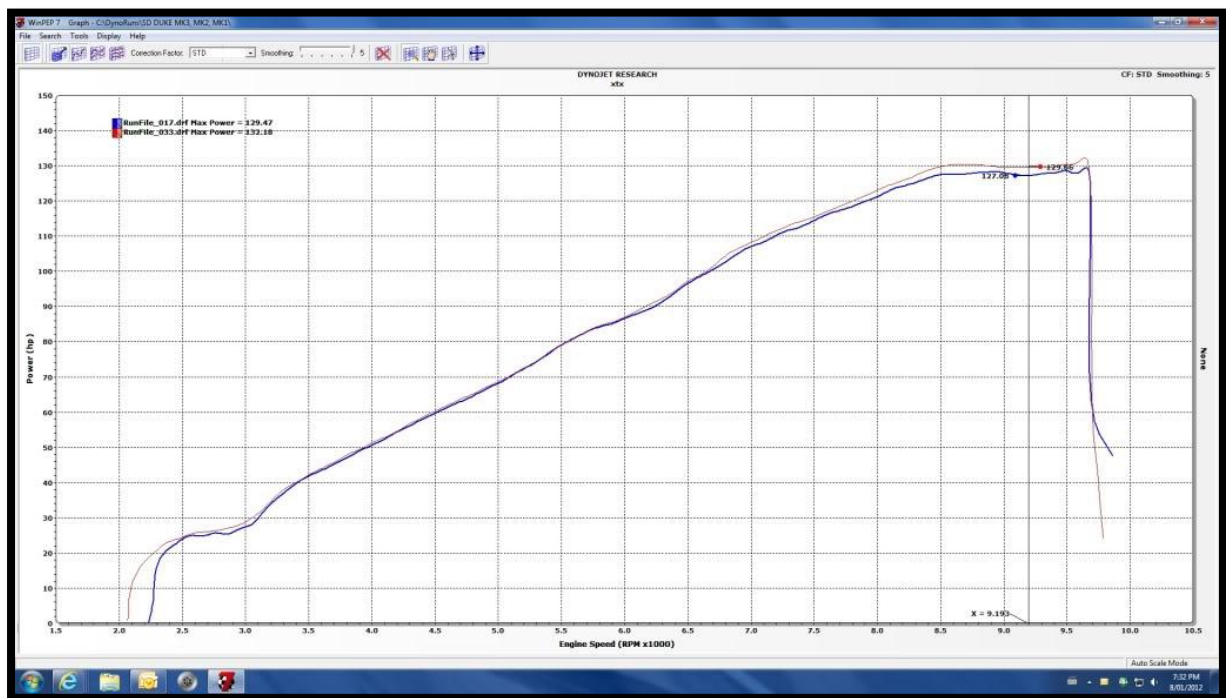


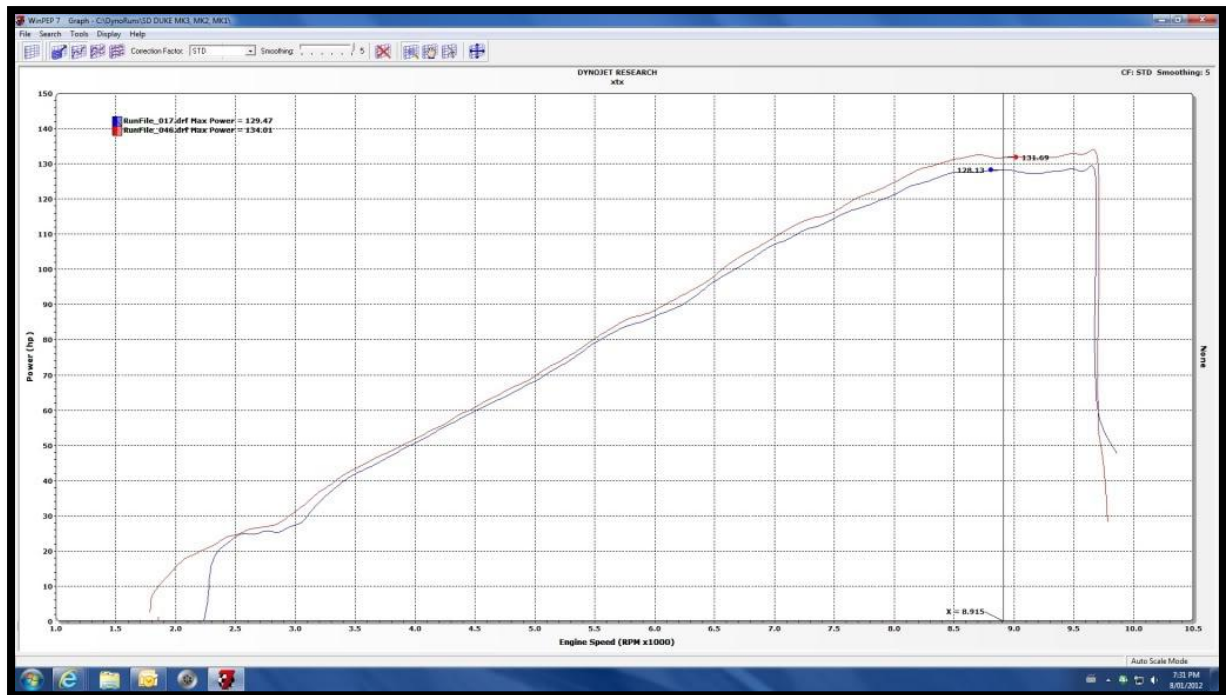
Here are the Dyno runs MH Box verse the MK2, MK3 DNA air boxes. You pay more for the DNA air boxes but they all produce more HP & Torque than the Moto Box, the MK3 showed a 4.5 HP gain over the MH, the MK2 makes 2.2hp over the Moto Box, the MK1 made 1hp over the MH Box. All the Dyno tests were done on a 990 SD on the same Dyno on the same day. The only thing that was changed was the air boxes.

The MH air box is a great air box & does show some nice gains, but it is not made on the same playing fields as the DNA air box. The DNA has better sealing around the throttle bodies, the DNA has better lid to air filter sealing with 4 clamping bolts. The air filter on the MK1 & 2 offer more air volume because the MK series has a taller filter when compared to the MH air filter, the MK3 has the extra air filter in the lid for more direct air flow down the throttle bodies. The dome lids on the MK2 & MK3 have a unique shape to direct air flow across the throttle bodies & is quite different to the MH lid.

Allot of riders only look at the price, as you can see the air boxes are very different. The MK1 Dyno results are very similar to the MH Box so it would be fairer if you compare the MH price with the DNA MK1 air box. With these facts one can make a better informed decision based on performance & price to suite your pocket.

MH Box in Blue V MK2 in Red





I modified a DNA MK1 lid with a filter fitted to it, this has been designed to run with the RC8 stacks, you can't buy this MK1 lid with the top filter from DNA it is my idea copied from the MK3 design. My friend Kev2 did all the machining for me. I am busy building a new Tune ECU map for you guys for the MK3 air box + RC8 stacks, when I have finished that map this week I will fit this lid to see how it changes the A/F ratio & will add it to my mods list of Dyno mods to be to be tested.

A MK2 lid as a comparison.







5.11 IGNITION ADVANCE 2010 SMR

One mod that has shown negative results.

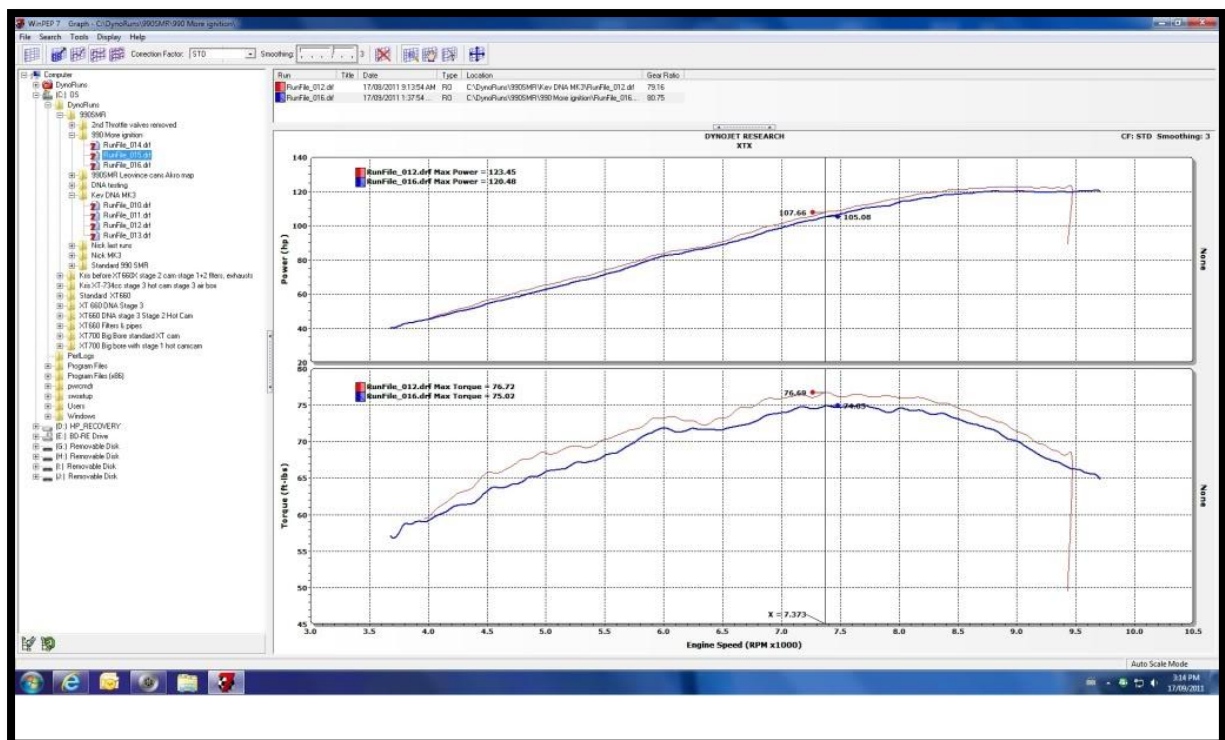
Ignition map based off a map built by another well known 990 tuner, I used his ignition maps which gave around 3 to 4 degrees more advance then my standard SMR ignition map, then built a fuel map at 13.2:1 & headed for a few power runs on the Dyno.

I have just come off the Dyno this afternoon & the Dyno does not lie, my SMR does not like the ignition advanced more than standard ignition map, it lost HP & Torque everywhere. One thing we have to remember is the SMT/SMR already has around 5 degrees more ignition advance than the other 990 models in standard form.

Finally when Dyno jet decide to release the PCV for our bikes I will build a proper ignition/fuel map using Tunelink. Tune ECU just takes too long to build a proper map.

Red run before ignition advanced.

Blue run with ignition advanced. The rev limiter on this map was set to 9650rpm.



5.12 THROTTLE CAM MOD

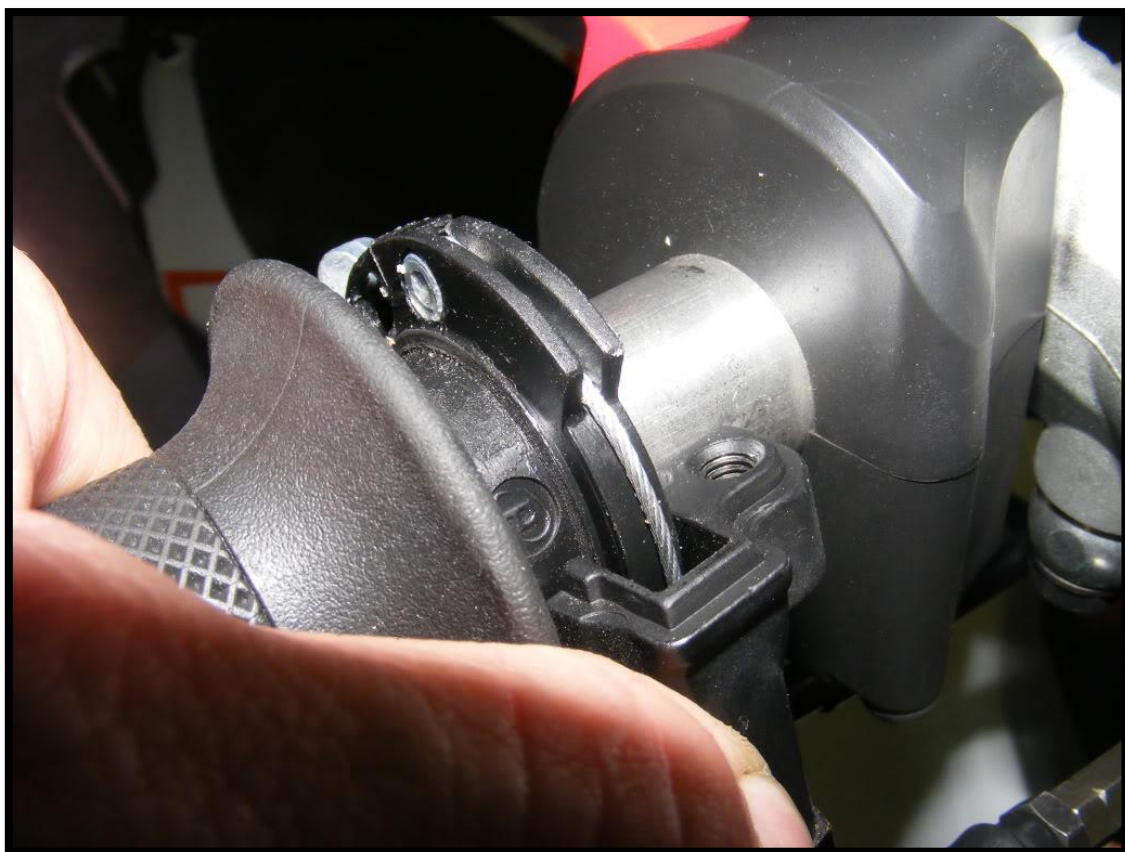
A great mod that reduces the twitchy throttle at small throttle openings.

Not my invention but have done this mod on my Yamaha XT660X before to get rid of the twitchy part throttle openings & thought I would apply it to my SMR. It works rather well & now have better throttle control at part throttle openings & it costs nothing.

You basically re-groove the cable guide down by 1mm from the cable nipple to the first 1/3rd of the total opening distance, this allows for better control at small throttle openings.











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5.13 STAINLESS STEEL BOLTS

All Bling, looks better.

I decided I will start to replace every galvanized KTM bolt on my bike, they just don't weather well.

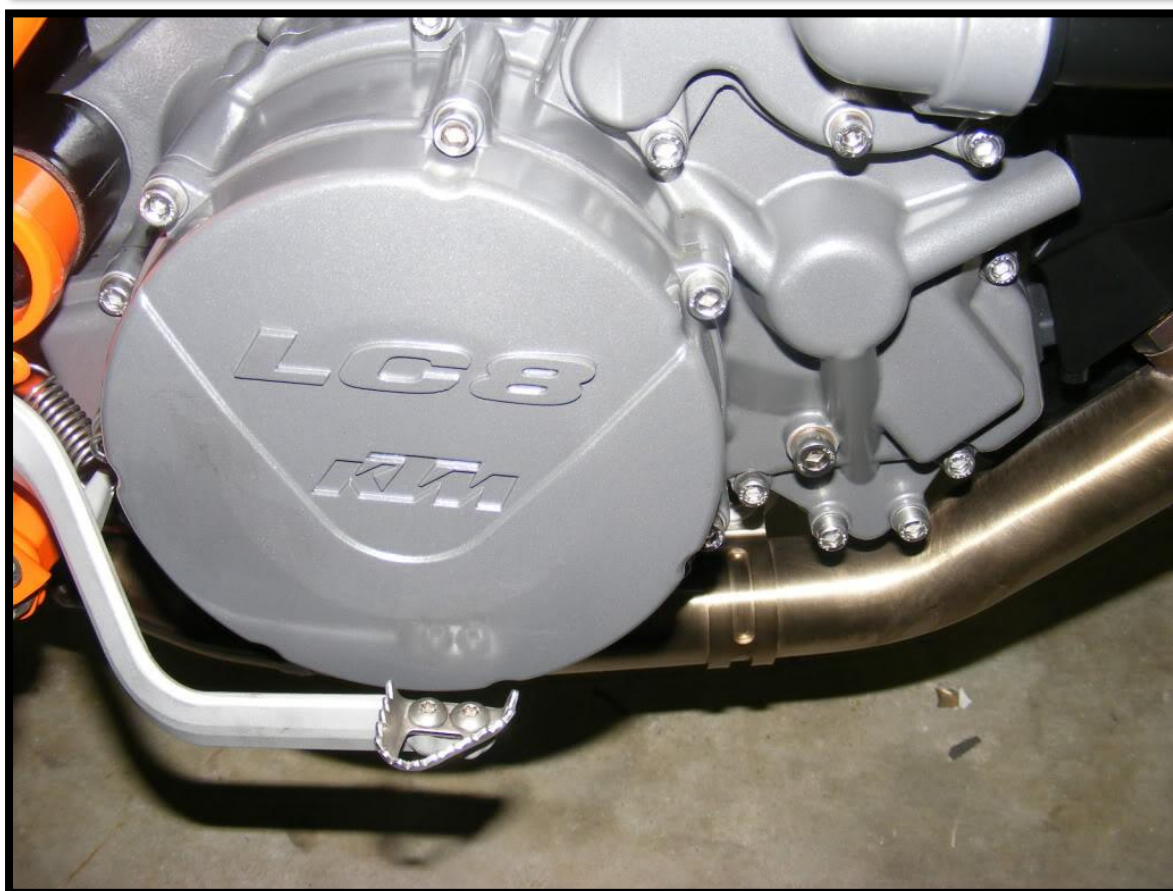
I got a complete engine Cap head M6 & M8 bolt kit from these guys.

[http://cgi.ebay.com.au/ws/eBayISAPI.dll ... K:MEWAX:IT](http://cgi.ebay.com.au/ws/eBayISAPI.dll...K:MEWAX:IT)

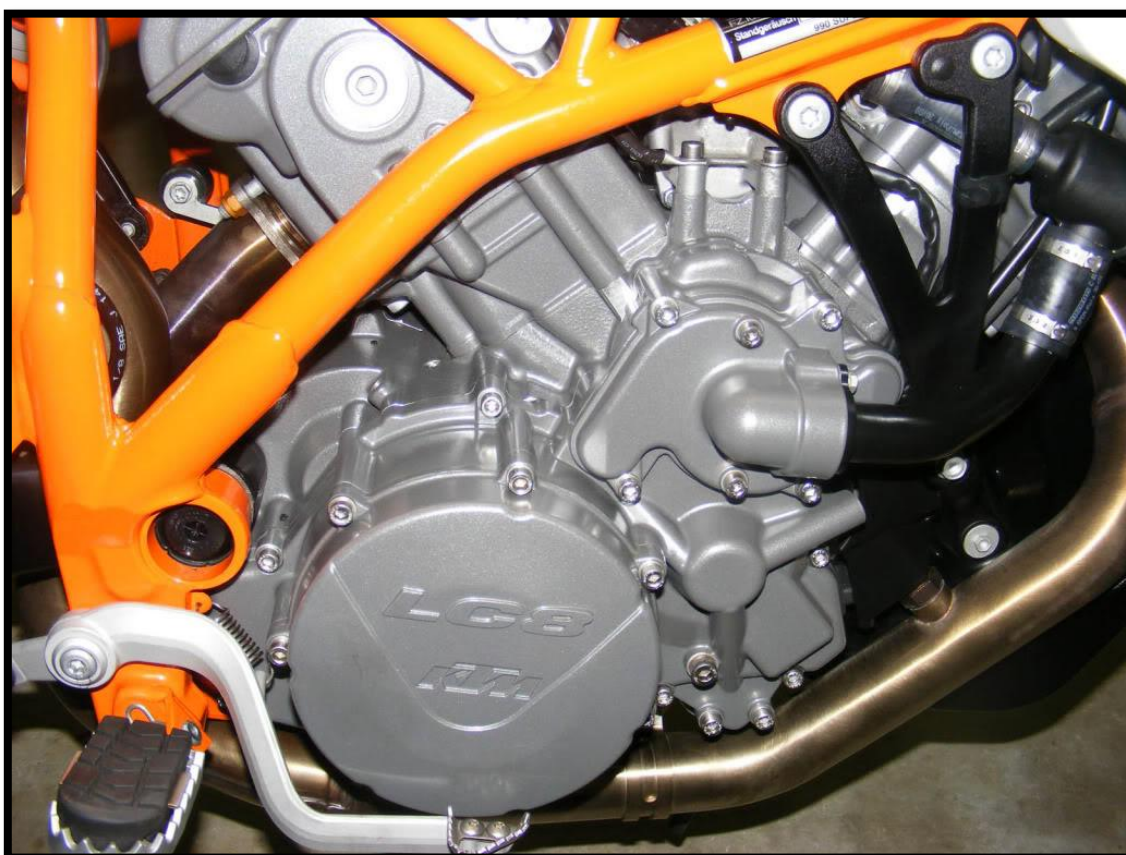
You can get all sorts of bolts from these guys.

[http://www.probolt-australia.com/index. ... to-08.html](http://www.probolt-australia.com/index...to-08.html)





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5.14 LOWERED FORKS

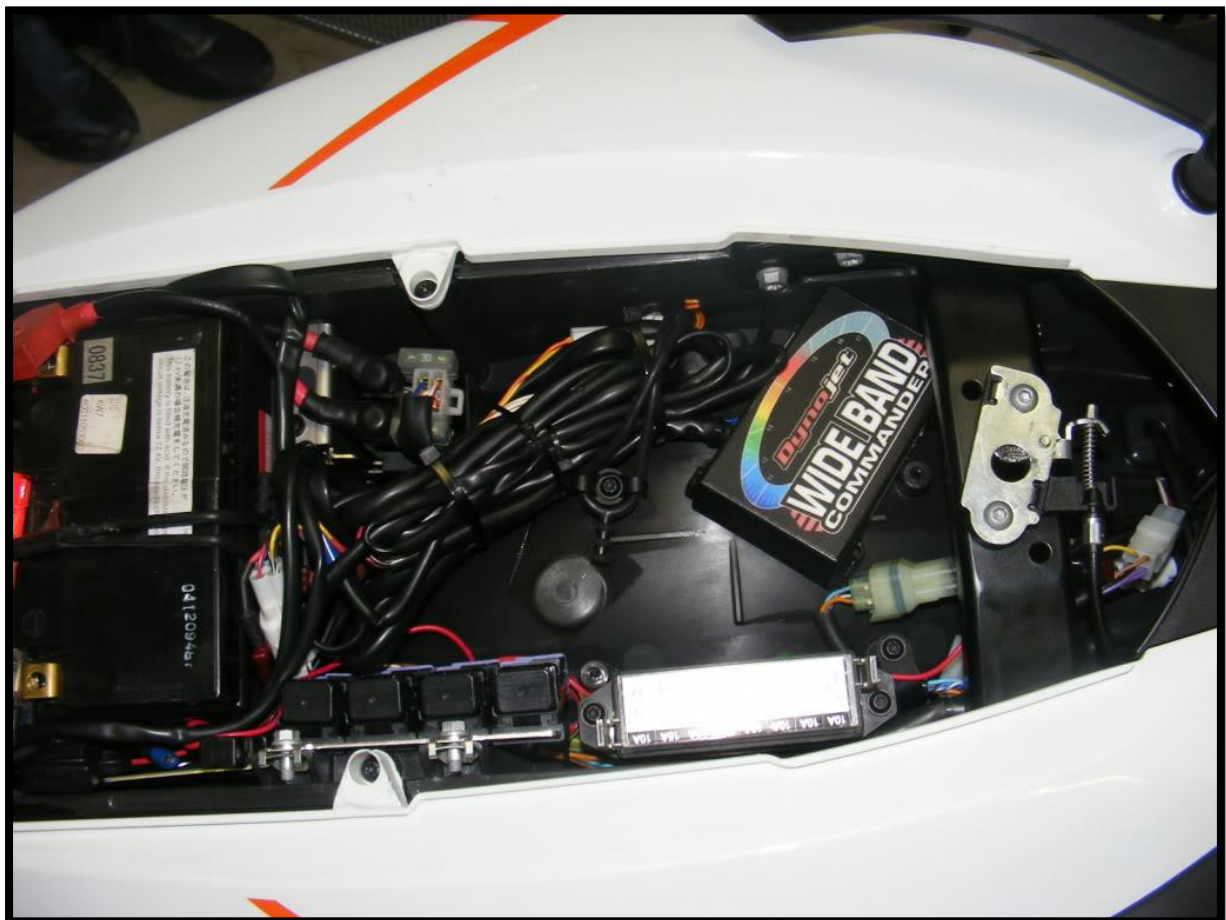
I have lowered my forks through the triple clamps by 10mm, this has made my SMR turn in quicker in the tight stuff & I don't ride at high speeds very often, it feels sweet up to 200kph.

5.15 WIDE BAND COMMANDER

I also run a Dyno Jet Wide Band Commander version 1. I use this device to check & data log my A/F ratio & to build my maps before heading to the Dyno for a fine tune & power run.

<http://www.youtube.com/watch?v=Vnyb3PCr...er&list=UL>

<http://www.youtube.com/watch?v=K5ubpdHu...er&list=UL>





5.16 SHORAI BATTERY

Here is the Shorai battery compared to the KTM OEM battery. The Shorai battery comes with packing foam shims to account for the smaller battery.

Great weight saving at 2930 grams lighter than the OEM battery, cranks the bike much faster with 270 cold cranking amps.

<http://www.shoraipower.com/p-155-lfx18a1-bs12.aspx>







The OEM battery.



5.17 ENGINE BREATHER MOD

As for the dirty valves, remove the engine breather pipe from the air box & run a 15mm mini filter on it & block off the air box side. By removing the engine breather from the air box not only are you removing the oil splatter in the air box you will not be re-breathing polluted air from the engine breather so the motor will always be getting the best quality air for the best HP & Torque .

You can just see my engine breather filter to the side of the air box in blue, they are around \$10 off EBay or from your local car shop.

[http://www.ebay.com.au/sch/i.html?_nkw= ... m270.l1313](http://www.ebay.com.au/sch/i.html?_nkw=...m270.l1313)

Then get a 15mm joiner from your local hardware from the garden section for a \$1 or 2

[http://www.ebay.com.au/itm/15-X-6MM-PLA ... 2ea6828d51](http://www.ebay.com.au/itm/15-X-6MM-PLA...2ea6828d51)

[http://www.ebay.com.au/itm/Washing-Mach ... 61cd58c999](http://www.ebay.com.au/itm/Washing-Mach...61cd58c999)



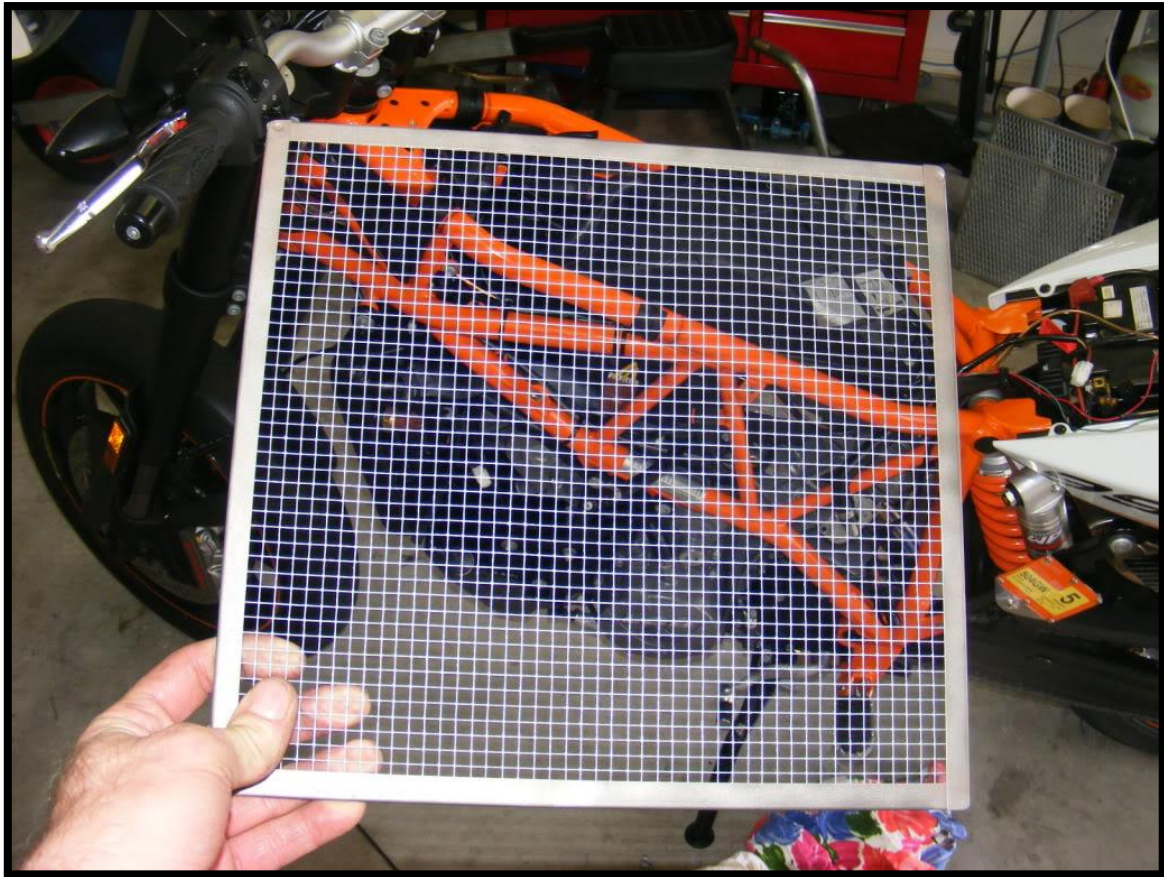


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5.18 RADIATOR COWLING

I made up my own cowling from metal mesh, bent flat plates over the ends of the mesh & spot welded it together, welded 3 securing brackets, bent the mesh into the shape of the radiator & powder coated it in black.





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5.19 DUAL VELOCITY STACK

We been playing with these stacks looking for overall HP & Torque.





KTM



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Ok guys I built a single cylinder tune map for all my mods using Tune Link software with my PCV today.

The mods on my bike for the Dyno run.

DNA MK3 air box.

Leovince pipes.

2nd flies & shafts removed.

EPC turned off.

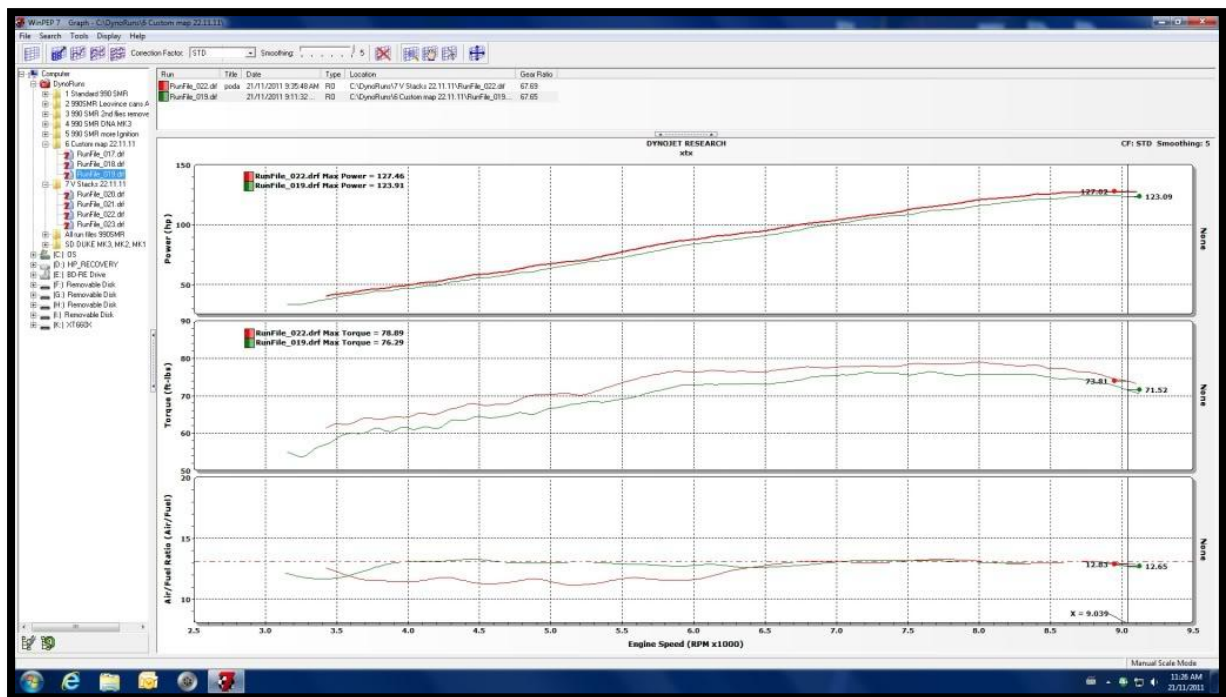
O2 sensors turned off.

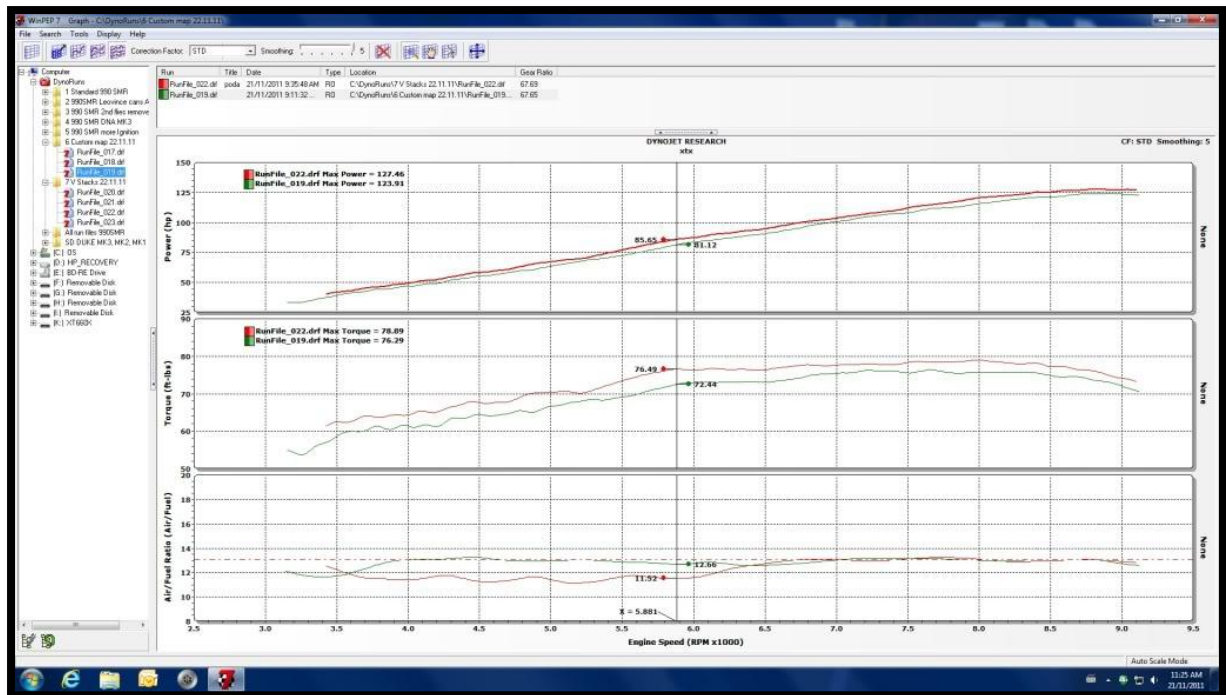
Custom PCV map with single cylinder tuning.

I did a final power run then fitted the metal stacks & as the results show the stacks made HP & Torque everywhere. I some places up to 5HP.

The Green run is my final power run after the custom mapping

The Red run is with the metal stacks fitted no map change, we should be able to pick up more HP & Torque below 6000 rpm as the stacks made the bike run around 12:1. I will be playing with different length stacks to get the right balance in HP & Torque.





Different versions of the stacks.

I was working up these stacks today with the help of a friend, they are different dimensions to the other stacks I have been testing. They are not finished, I have a few more hours of polishing left.





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Once I have all the Dyno testing results from the stacks + DVS I will choose which combinations of stacks work best for all over HP & Torque gain, I will then build a new custom single cylinder PCV map for the combined mods so I have the best A/F ratio, this will give me the best HP & Torque & the bike should ride well. It is easy to build mods for max HP at peak RPM's it is harder to build mods that give you a power again everywhere in the RPM range where most of us ride.

A few photos of the mods I am working on, I have fitted 25mm lower RC8 stacks + my DVS & I would say I have a further 3 to 4 HP up top compared to the standard SMR OEM stack + DVS, it hits the rev limiter so much quick now, the Dyno will show the true Hp gains & loses. I still have to cut the fins down on the inner stacks to match the lower stacks.







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This is my last Dyno run in Green against my completely standard SMR in Blue. I know I have more HP & Torque with the latest DVS but have not Dyno proven them yet so can't count them in, I am hoping for around 132 rear wheel HP with the latest DVS mod we will see when I am on the Dyno in a few weeks time.

The Green Dyno line has been cut short of the rev limiter because I did not have rev extend added to my new PCV at the Dyno tune, Dyno Jet have since given me the code so my bike can now rev to 10K if I want it to.

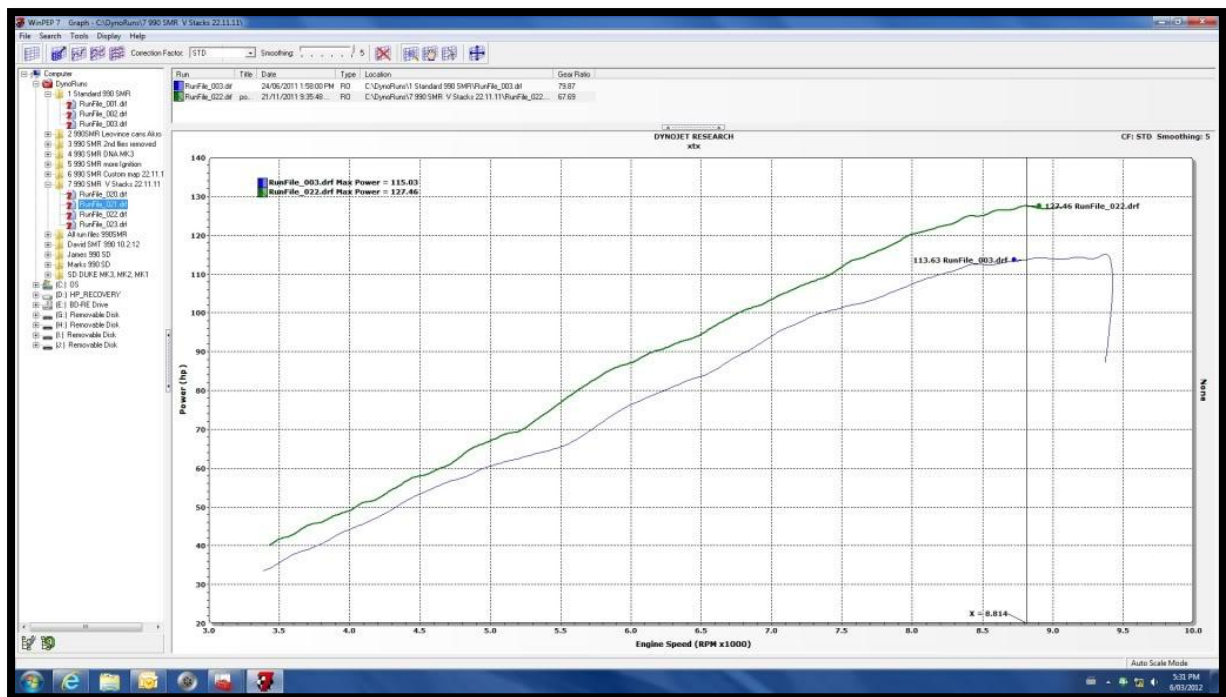
The power difference up top is amazing, the mid range torque is the most noticeable gain for general riding, whacking the throttle open & it pulls like a train instantly anywhere in the RPM range.

Between a busy job 55 hour +, 5 day week & an understanding wife I find the time to play, I have done it all my life & the wife is quite used to it by now, she says you just can't leave anything standard can you. The problem is all my friends all have bikes as well so I am always playing with some sort of mod, my other project at the moment is on my mates 2011 Z1000 ABS, we are doing a few mods to get more out of the bike, I will have both bikes on the Dyno in a few weeks time.

Standard SMR in Blue.

HP





Sundays mods, I have been meaning to make up some lower stacks than the RC8's & have quite a few standard stacks to play with. The stacks I cut up had been already machined with a 4 degree taper where the standard stacks are straight inside so the intake is 2mm bigger at the top of the funnel & tapers down. Once I had cut the base & top flat & square I Epoxy them together using the correct Epoxy glue for this type of ABS plastic. The new stacks

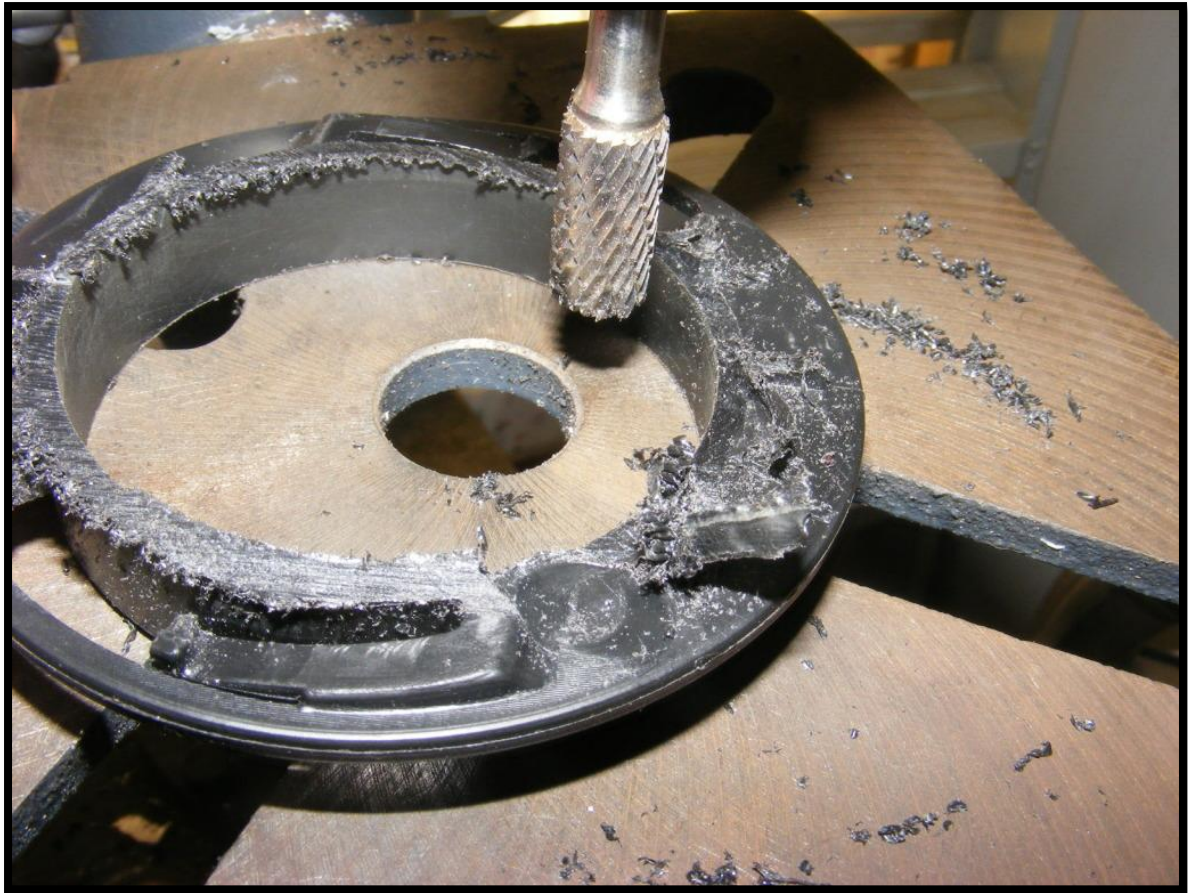


are 5mm lower than the RC8 stacks, I will test them out at the next Dyno session.

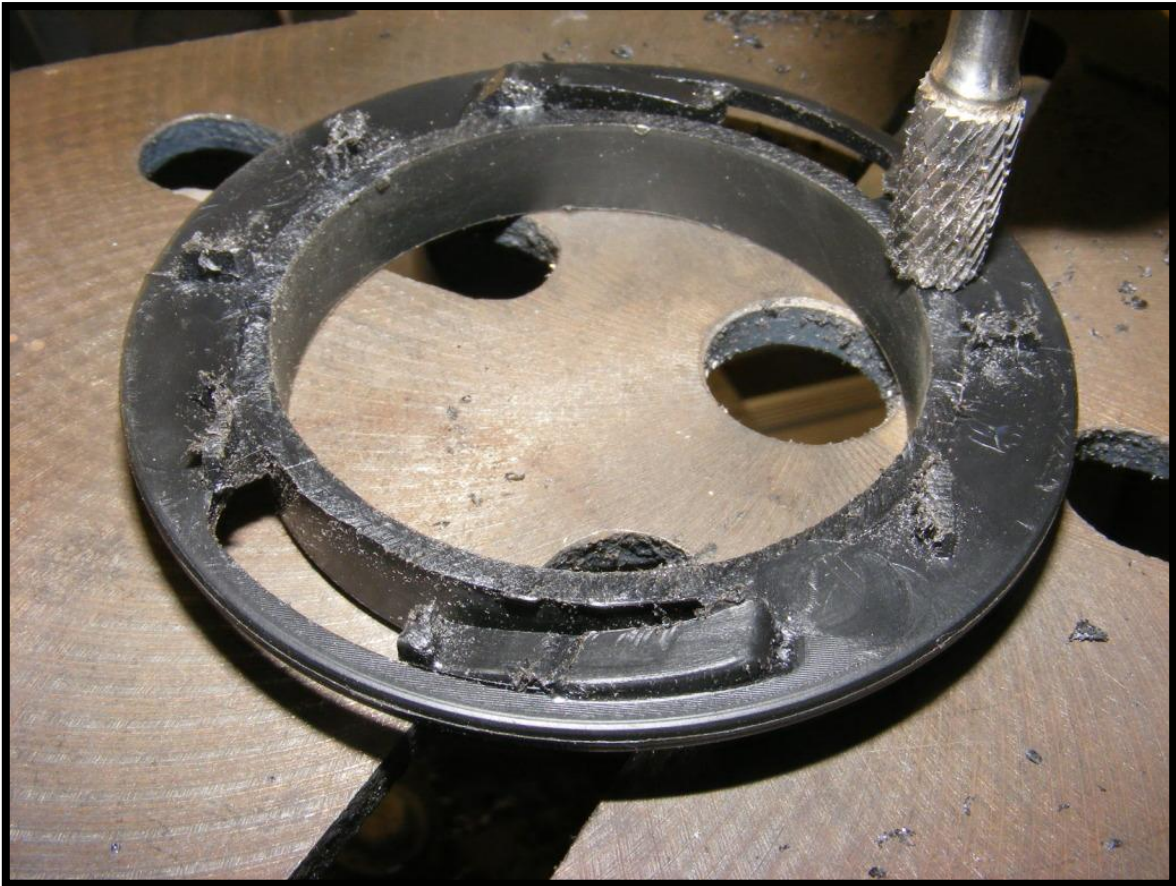




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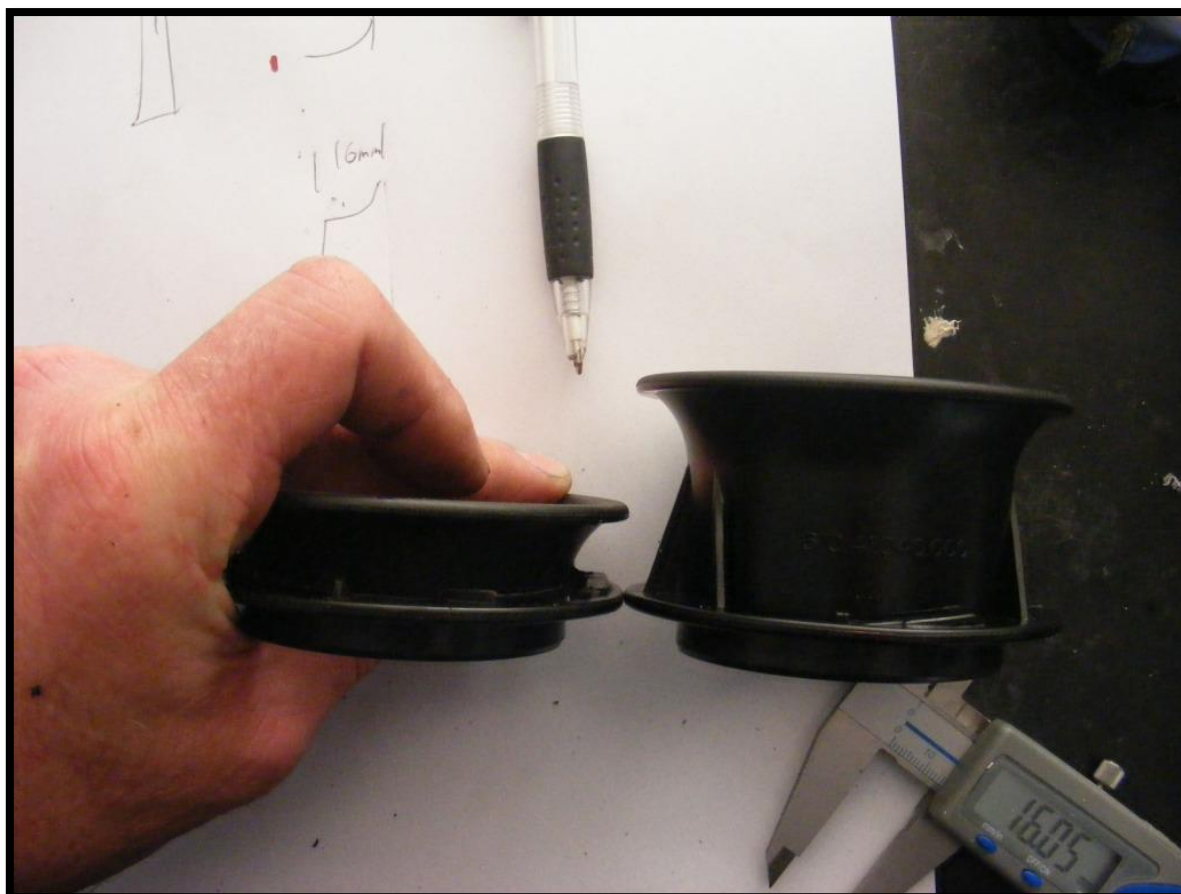
KTM



KTM



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The Dyno mods to be tested are building up, I fitted my home made lower stacks today & will build a map to suit, I like these lower stacks. Once I know which stack produces the best HP & where, I will fit the inner Dual Velocity Stacks & tune its length to suit the best main stack to get the most Torque & HP across the whole rev range.

My lower stack is 25mm lower than the standard SMR/SMT stack, it has a +2mm bigger funnel machined to 4 degrees.







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The range of stacks that I have been working with & there is still more to come.





From testing all these stacks I would not ride my bike with at least a RC8 stacks, I prefer the lower ones they smoothen out the bike even more.

THROTTLE BODY **1190 RC8 R USA 2010**

ENTHALTEN IM DICHTSATZ MOTOR KPL.
INCLUDED IN GASKET-SET ENGINE CPL.

FIG	PART NUMBER	DESCRIPTION	QTY
1	0081500181	SCREW FOR PLASTIC D=5X18	2
2	61041080000	AMBIENT-AIR TEMPERATURE SENSOR	1
3	61041085150	RUBBER SUPP. PRESSURE SENS. 06	3
4	61041085100	PRESSURE SENSOR 06	3
5	61036023100	VACUUM CONECTION 2006	2
6	60031098001	HOSE 3.2X8.5 PER METER	x
8	61241040000	INTAKE TRUMPET 08	2
9	61241001000	THROTTLE BODY CPL. DK52	1
10	69006001031	SENSOR-RETAIN. PLATE AIRBOX 08	1
11	69006001032	HOLDER WIRING HARNESS REAR	1
12	0081050161	EJOT PT SCREW K50X16 1451	4
13	61041031200	TIMING CHARGER EFI 08	1
14	60039030000	VIBRATION DAMPER DIGITALBOX 03	2
15	0021050003	WASHER DIN9021-A 5.3	1
17	0912040203	AH SCREW DIN 912-M 4X20	2
18	61041088050	SHIM 4.3X15X1.25MM GALVANIZED	2
19	61041088000	ROLLOVER SENSOR 05	1
20	0024060136	HH COLLAR SCREW M6X13 TX30	1
21	69041088050	HOLDER ROLLOVER SENSOR	1
22	75041023020	O-RING	3
23	75041023010	SEAL RING	2
24	61241023044	INJECTOR CPL.	2
25	61241013044	FUEL HOSE CPL.	1
27	75041013060	SCREW SHOULDER	2
28	61041060040	SCREW FOR SUPPORT STEPPER MOT.	1
29	69007029000	PVC-CLAMP HEYCO 13.9 3379	1

How much would you say the RC8 stacks lean the AFR over the stock one's.
Thanks again for all your work on this.







Amazing what you can do with a 3D printer, James drew it in Solid Works Emailed the drawing to me & Kev2 3D printed a Dual Velocity Stack off for me to test. It will look better in a STD stack.

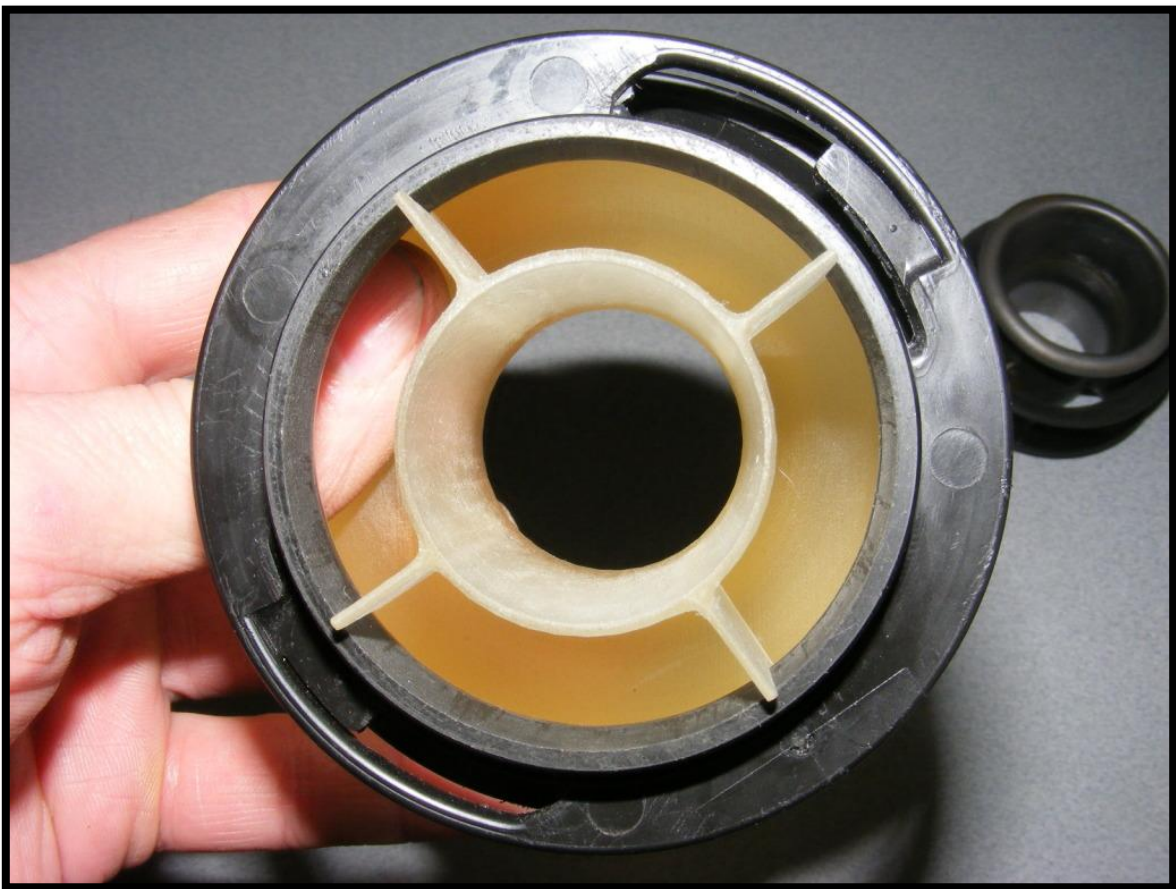
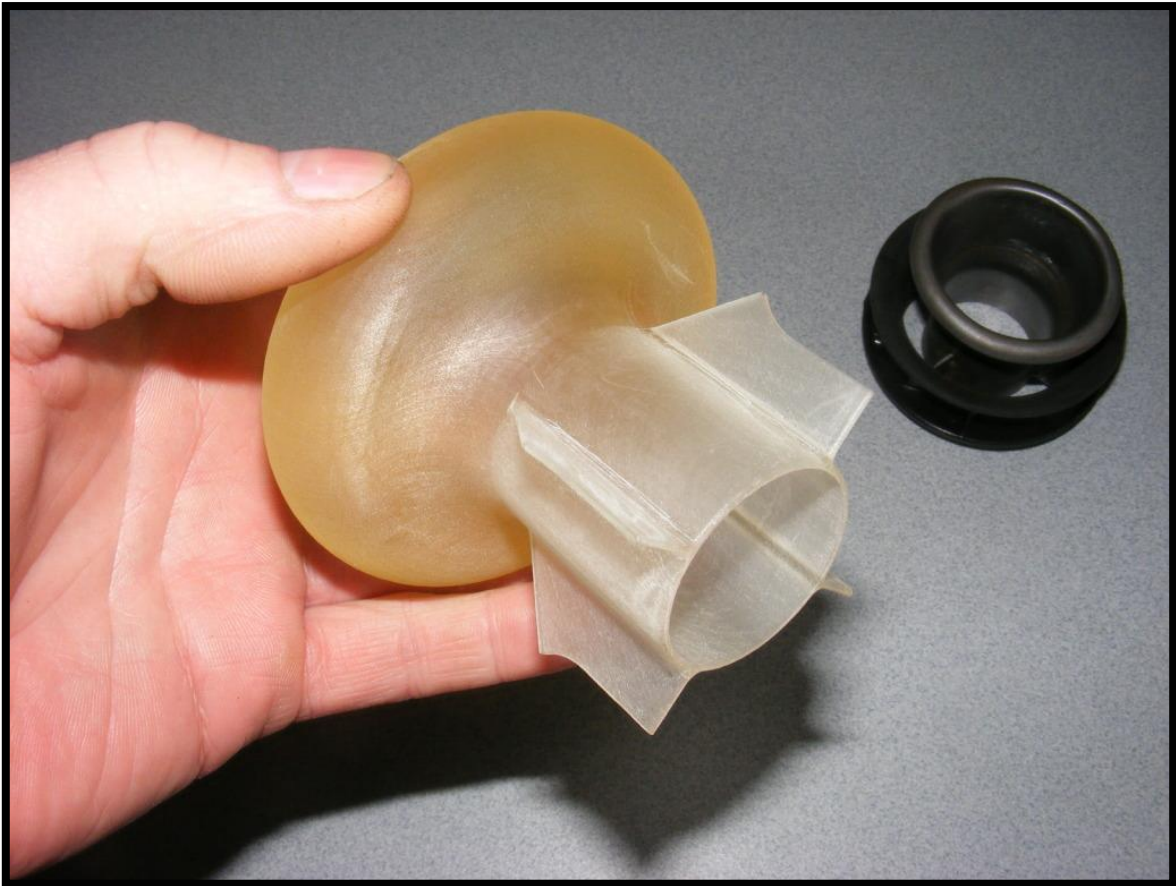




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6 EXHAUSTS

6.1 HEAT SHIELDS

To remove the SMT heat shields and luggage racks and install the SM short heat shields you need a few parts (although they are not expensive).

The list is documented elsewhere but is not complete, here is my list to do a complete change over:

SM Heat shield (L) - 62605090000

SM Heat shield (R) - 62605091000

Heat foil (L) - 62605090050

Heat Foil (R) - 62605091050

Exhaust bracket (L) - 6000508500001S

Exhaust bracket (R) - 6000508600001S

SM Shield hanger (L) - 62608041150 (make sure you don't order the SMR ones as they are different)

SM Shield hanger (R) - 62608042150 (make sure you don't order the SMR ones as they are different)

Screw for plastic (you'll need 8) - 0081050121

I think that's everything you need - maybe £60 or £70 here total. (the SMR heat-shields are loads more but then they are CF)

6.2 AKRAPOVIC

<http://www.akrapovic.com/en/pages/default.aspx>

Ten Reasons Why Akrapovič

The only way to win is to be the fastest, to be unstoppable, and to be unbeatable in every way. This is the motto of the Akrapovic Company since the very beginning.





1. Innovative Design

Akrapovič is recognized as a leader in exhaust system design. Akrapovič patented hexagonal shaped mufflers created a storm in the motorcycle aftermarket industry, and this shape transformed the concept of exhaust systems, replacing the standard oval. Our car exhaust systems set the standard for design right down to the exquisite tailpipes. Akrapovič: there are no better-looking exhaust systems

2. Pure Power

Our exhaust systems are designed to provide you with higher levels of performance. We call it Pure Power. Reduced weight from the combination of the right materials and the best design to ensure optimum exhaust flow. More horsepower. More torque. More performance. Pure Power.



3. The Unmistakable Sound of Akrapovič

Our exhaust systems sound like no others. Just the right notes at the right times. Deep, resonant sound. The sound of Pure Power. With our car Wireless Kit and on our custom motorcycle range, the sound is adjustable. Make your own sound with Akrapovic.



4. Race Proven

Racing's in our blood. Akrapovic has successfully supported racing teams since it was founded. Over sixty world champions have relied on Akrapovic when it really matters.



Official Sponsor of Yamaha Factory Racing MotoGP team and partners with over fifty motorcycle race teams in all formats on and off road.

Winners with Audi Sport at the 24 Hours Le Mans race in 2010, 2011 and 2012 and Official Partner to Audi Sport in the FIA World Endurance Championship. Akrapovic is also an Official Partner to BMW Motorsport in the 2012 DTM Championship.

There's no better proving ground for your exhaust system than the world's most demanding racetracks.



5. Research, Development & Testing

We invest heavily in research and development. The best people, new materials, new technology, and new processes ensure we develop innovative new products. We back this up with rigorous measurement, testing, and quality control to ensure our exhaust systems meet the most stringent EC type-approval standards where required.



6. The Best Materials

We only use the best materials. Titanium heat-resistant alloys for all the key parts of our titanium exhausts, not just the outer sleeves like many of our competitors. Austenitic stainless steel and carbon fibre which is pre-impregnated and ultralight for high tensile strength and temperature resistance.



7. Advanced Technology

We are pioneers in developing and using technology to bring real benefits to the rider. Technology and its applications are developed in-house. Hydro forming is one such process, where header tubes are molded by applying pressurized water. The material forms the ideal shape for optimum exhaust flow, with no loss in strength. We are recognized as pioneers in the plastic deformation of titanium alloys and also in precision welding.



8. State of the Art Factory

All Akrapovic facilities are state-of-the-art, where quality control is maintained by designing and manufacturing all exhaust systems in-house. This enables the creation of exhaust tubes to our own demanding specifications for maximum performance and quality. In-house laboratories ensure that the most exacting standards are met for type approval and certification.



9. Passion & Experience

It's the passion, experience, and dedication of the Akrapovic team that few can match. Over twenty years of devotion to developing the best exhaust systems and a desire for perfection in the design, performance, and sound of all our products. All Akrapovic employees work with a passion for our products, for racing, and for satisfying our customers.





10. Attention To Detail

It's all in the detail. From the design right through to the packaging. The right looks, the right sounds, and the right power delivery combined with perfect fit and durability. These are the details that matter.

Maintenance and cleaning.

It is very important to clean the exhaust system thoroughly after installation, as any dirt or debris will later be burned into the exhaust system. A contact cleaner can be used to clean the pipes, while for the titanium muffler outer sleeve we recommend using a multi-purpose spray lubricant (WD-40 or equivalent). The carbon-fibre outer sleeve should be wiped with a soft dry cloth.

WARNING: Do not use automotive wheel cleaners or any cleaning products which contain acidic additives to clean the front rosettes of Akrapovič Bolt-On exhaust systems.

If such cleaning products are used damage occurs in the form of corrosion of the ALU front rosette, which leads to the breakage of the inner flange which the muffler outer sleeve is attached to.

In order to get rid of dirt and build up more easily, such cleaners contain acids which react with, i.e. eat into, the surface. The reaction gradually increases over time, which has a major effect on aluminium, which is very susceptible to the effects of acids. The compound of aluminium, acid and water leads to the creation of the galvanic effect, which results in even greater damage. This problem is especially acute because the flange in question cannot be thoroughly sprayed with water and dried. At first the damage is undetectable, but the chemical reaction continues unseen.

Exhaust system care and maintenance

Caring for your exhaust system requires an understanding of the system's components. Since the system can be composed of various materials, not all components are cleaned in the same way.

The basic rules are:

Always clean the exhaust system when it is cold. Cleaning will prevent spots from burning onto the surface. Do not use aggressive chemical cleaners or any cleaning products which contain acidic additives to clean exhaust systems; they can damage the sticker and / or the aluminium parts of the exhaust system.

Components made of different materials should be cleaned in the following manner:

muffler – titanium outer sleeve: use a soft cloth sprayed with a multi-purpose spray lubricant (WD-40 or equivalent)

muffler – carbon-fibre outer sleeve: use a soft dry cloth

stainless steel link pipe: use a soft cloth sprayed with a contact cleaner / degreaser, then wipe with a soft dry cloth (return to original finish by polishing)

titanium link pipe: use a soft cloth sprayed with a multi-purpose spray lubricant (WD-40 or equivalent)

evolution model - tubes: use a soft cloth sprayed with a multi-purpose spray lubricant (WD-40 or equivalent)



racing model - tubes: use a soft cloth sprayed with a contact cleaner, then wipe with a soft dry cloth

racing model with titanium link pipe:

header tubes & collector - use a soft cloth sprayed with a contact cleaner, then wipe with a soft dry cloth

titanium link pipe - use a soft cloth sprayed with a multi-purpose spray lubricant (WD-40 or equivalent)

After every cleaning, we recommend

Check the operation of the brakes and suspension. Make sure all the bolts are sufficiently tightened. If the exhaust system touches the cowling or other parts repeat the adjustment of the exhaust system or contact your authorized dealer.





KTM



Akra full system

<http://stores.sportbiketrackgear.com/Detail.bok?no=23712>

<http://stores.sportbiketrackgear.com/Detail.bok?no=23709>





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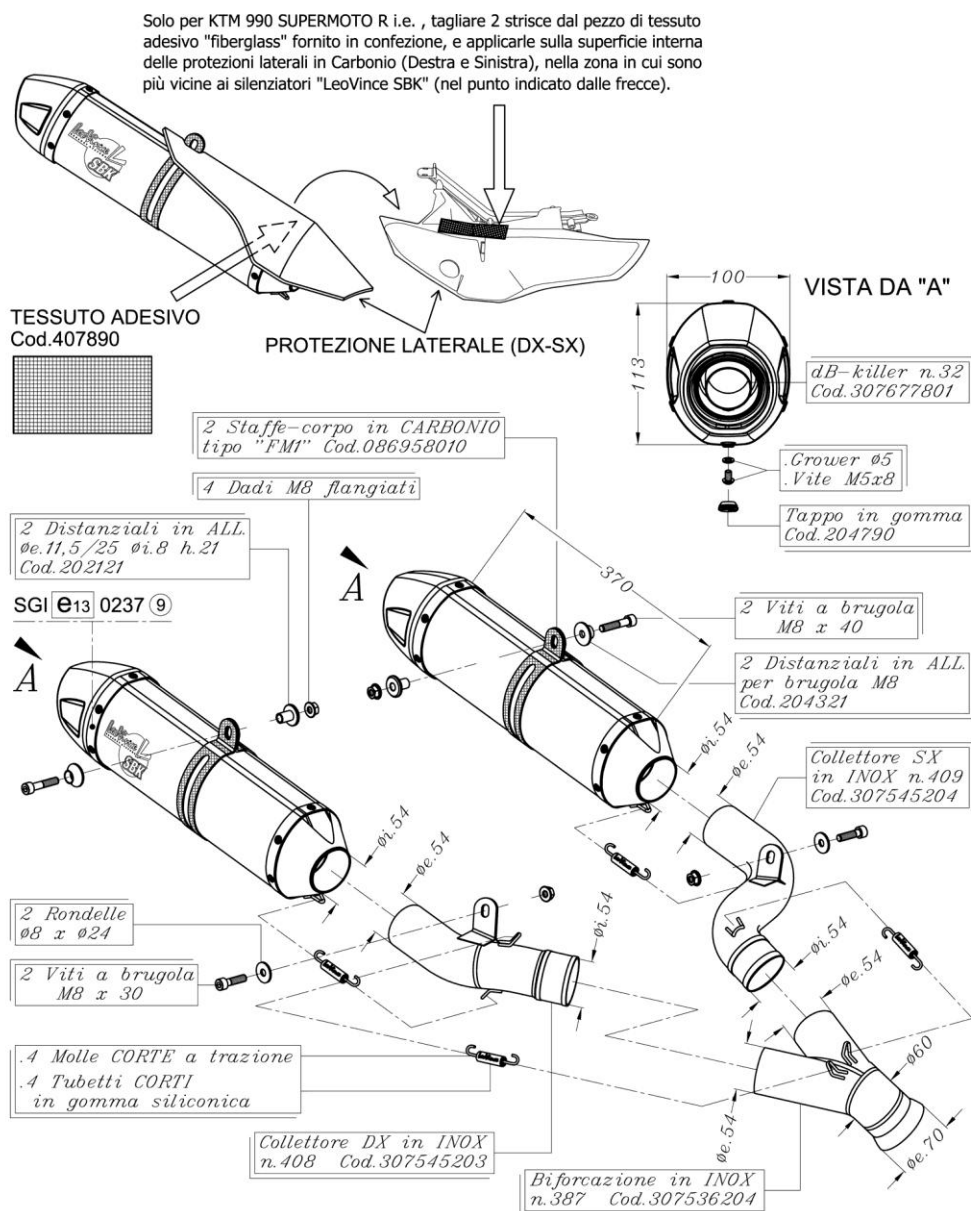
KTM



KTM

6.3 LEOVINCE CANS SMT/SMR

LV 8414 used provided mounting kit for SMR.



FITTING INSTRUCTIONS

ATTENTION: before carrying out any work on the exhaust, check that its surface has cooled so that it will not damage

components, which are not heat-resistant (such as fairing, hoses, rubber sleeves, etc.), or the operator.

1. Remove the OE silencer(s)

2. Check that the mating surfaces are in good clean condition, slide the link pipe on to the original header, taking

care not to damage the graphite gasket (if supplied) which should replace the OE gasket. Partially tighten the securing

strap to allow a degree of further adjustment.

3. Slide the Leovince SBK silencer onto the link pipe, check the alignment of the mounting eyes for the springs

and the alignment of the exhaust outlet to the rear of the silencer, and then link the parts together with the springs

provided

4. Fit the Carbon fibre strap used to locate the silencer. Fit the strap to the silencer bracket(s), fit spacers, washers,

and mounting brackets (when present) as shown in the drawing, and loosely fasten all these parts with the

appropriate fasteners.

5. Tighten the various clamps which join the Leovince SBK link pipe(s) to the OE exhaust headers.

Note: for KTM 990 SUPERMOTO R i.e. only: cut 2 strips (dimensions 20mm x 100mm) of the adhesive fibreglass

material supplied in the packaging and stick them on the internal surface of the carbon fibre side protections

(right and left), in the place where they are nearest to the LeoVince SBK silencers (as shown by the

arrows).

6. Start the engine, wait a few minutes until it reaches operating temperature, and check that there are no gas



leaks.

IMPORTANT: During the first km of running, the exhaust system needs breaking-in; therefore, slight gas leakage

might occur. After approximately 100 Km, check all the fasteners.

ADJUSTMENT:

This silencer has been developed by Leovince on an electronic test bed using a machine in perfect condition, and

in standard trim.

MAINTENANCE:

From time to time, check all the brackets and fasteners, which could be affected by use (sound-deadening material,

seals and other rubber parts) and replace them periodically. The silencer may be cleaned using gasoline, diesel

oil or alcohol. Absolutely avoid the use of any kind of solvent.

It is normal for there to be some discolouration of the silencer, which is the result of heat and the nature of the

materials used.

IT IS FORBIDDEN to modify silencers. Whatever form this may take, SITO GRUPPO INDUSTRIALE declines any

responsibility for defects, problems, or malfunction, arising from the use of any product which has been modified

or tampered with.

WE SUGGEST THE FITTING TO BE MADE BY PROFESSIONALS

TECHNICAL DRAWING

Installation was very easy and this is final look after it (note that exhausts sit a few degrees off, but nothing one would notice).

REF. 8585 Carbon fibre

Total LeoVince weight: 5.46 Kg, **Standard System weighs 1060g**

header pipe(s)	silencer(s)	fasteners	Total
1.05	4.20	0.210	5.460



REF. 8414 Stainless steel

Total LeoVince weight: 6.26 Kg **Standard System weighs 1060g**

header pipe(s)	silencer(s)	fasteners	Total
1.05	5	0.21	6.26





KTM

Leo Vince SBK alloy cans to my 990 SMT yesterday.

The fit and finish is 110% - awesome.

I tried them on the road both, with and without the db killer.

My preference is with the db killer in, like this the exhaust tone is still significantly roartier than standard. 🧐

However with the db killer out - you will have to ride with permanent ear plugs.

Also played around with the appearance a bit - with or without the exhaust heat shield.

I personally prefer the looks of the bike without the exhaust heat shields - so I have left them off.





KTM



KTM



Sometimes people just want photos to help with their purchasing decisions...so here are some details of Leo Vince 8414 cans.

I left off the carbon covers for these shots, just to show the entire thing for fit and finish, as well as a couple close ups of welds, joints, etc.*FYI: I realized after these photos, that I needed to reuse the stock "washer" where the exhaust hangers bolt to the subframe. A flat washer is there in the photos, and is not up to snuff with the rest of the parts.*

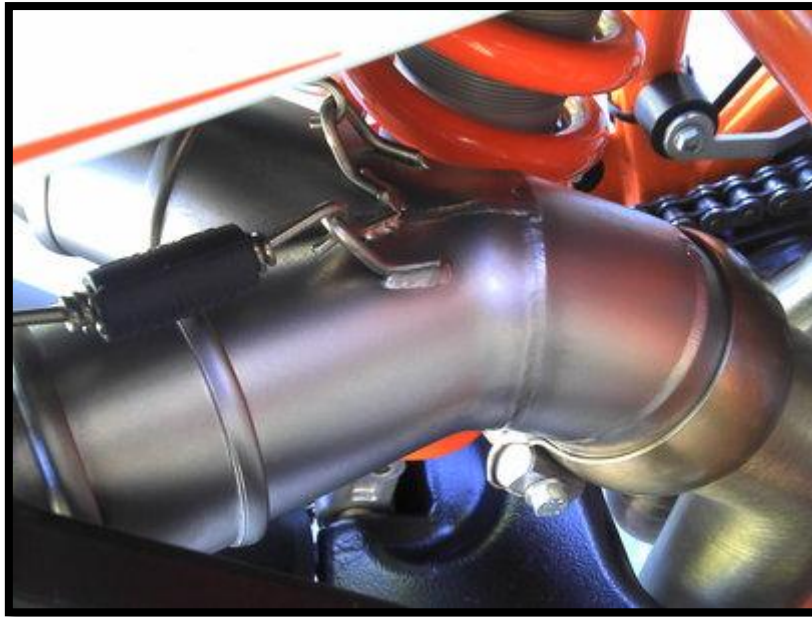




KTM



KTM



6.4 WINGS ON A SMT

http://www.wings.si/ver3/index.html?page=design*NOS = Non-Oval Shape

Received this from Gorazd Marovic today - thought it might save him answering the same questions time and time again! Hope it helps.

"

thank you for your interest in our products. Pictures and detailed description can be seen on [_www.wings.si](http://www.wings.si) <<http://www.wings.si/>>_

Here are the prices for KTM 950/990 SM / SM R / SM T / Super Enduro R:

- Titanium mufflers (pair- OVAL or NOS shape) without carbon end



caps____549.-EUR*

- Titanium mufflers (pair- OVAL or NOS shape) with carbon end caps_____599.-EUR *

*- postage
(additional)_____21.-EUR*

* _____-by using the** PayPal 4% will be added to the total sum*

For the customers inside EU no custom or tax will be charged since Slovenia is an EU member!

WINGS mufflers became very popular lately (even more than we hoped they would be some day).

We have no stock at the moment- mufflers are made practically on order. Your package can't be sent prior

at least 8th working day after your payment is received. Forwarder delivery time must be add in this time frame.

We are doing our best to produce as many mufflers as possible but we don't want to compromise the quality.

The packages are sent exactly in same order as the payments were received.

I'm sure your patience will be rewarded by getting the mufflers with probably best sound on the market.

Clamps, bolts and gaskets needed for the mounting are included.

You will also get two different sets of dB-killers (in the price included) for the sound tuning:

-small (slightly louder than original)

-large (louder).

They can easily be removed for sport riding.

We also produce the blanking plates for removing the SAS.

They are made of aluminum. 1 set costs 15.-EUR.

*How to purchase WINGS products? *



WINGS silencers can be ordered directly from us (producer).

That's the guaranty for the lowest prices.

*Paying options are: -*payment thru PayPal (4% must be added to the total sum)

-bank transfer

*If you prefer PayPal: *just reply to this E-mail and tell us that you have chosen PayPal,

exactly which mufflers do you want and which KTM bike you have.

Please don't send us any money until you get the PayPal payment request.

Using bank transfer: just reply to this E-mail and tell us that you have chosen bank transfer,

exactly which mufflers do you want and which KTM bike you have.

We will send you our bank account details for the payment.

I will gladly answer any additional questions you may have so please don't hesitate to ask.

Best regards,

Gorazd Marovic

PS: according to my friend- KTM dealer there is no changes on 2010 model regarding exhaust.

WINGS *-because sound matters!** *

PS: WINGS mufflers are designed to operate proper without remapping if dB-killers are mounted (either smaller or larger).

*You will get all benefits:

- better low-end torque
- more than 50% less weight
- much lower mufflers temperature
- awesome sound.*

If you want to drive without dB-killers (your neighbors won't be pleased) you should remap the EFI using the KTM-Akrapovic map for non-cat. bolt-on mufflers. You can't do this by yourself because specific hardware and



software is required. It can be done by authorized KTM dealers with proper equipment.
You can use the Power Commander also.

*NOS = Non-Oval Shape

SI PAT. M200650019

SI PAT. P200900074

EU PAT. 633557-0001

EU PAT. 001645953-001

US PAT: D593,014S

WINGS logotype and wings symbol are registered trade-marks





KTM



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Got my wings today. Gorazd sent them out on the 4th from Slovenia and I got them today (16th).

Install of the clamps was a serious pain. I ended up using a 6mm Allen bit in a 12v impact wrench to turn the bolt, then using a screw driver to pry the rear of the clamp up into place to get the threads to engage. But once that was done, it was easy. Like another poster said, use the original KTM bolts (3 per side) to bolt the can to the pipe. You can't get an Allen on the Wings bolt heads.





KTM



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KTM

6.5 REMUS CANS

New 990 SMT '10on HexaCone Half System #4883657009L+R

(Finish : Titanium)

This is the Slip-On System version of the REMUS HexaCone which includes the connector pipe.





KTM

6.6 QUILL OVAL EVO2 EXHAUSTS

http://www.quillexhausts.com/catalogue/ktm_evo2.html

<http://www.quillexhausts.com/>

[KTM EVO2 Silencer Range](#)

How to Purchase your new Quill EVO2 Silencer....

Select your sleeve finish, stainless steel, carbon, natural titanium or coloured (hand flamed) titanium sleeves. The basic price is for stainless steel, all other sleeves are an optional extra. Some models can only be provided with certain sleeves. The EVO2 comes complete with hanger straps (where necessary) and link pipes or bolt-on caps (dependant on bike model). All silencers are oval unless otherwise stated. Carbon tips are an optional extra for T3 and EVO2. If the original equipment is a pair, then we will supply you with a pair.



[KTM T3 Silencer Range](#)

How to Purchase your new Quill T3 Silencer....

Select your sleeve finish, stainless steel, carbon, natural titanium or coloured (hand flamed) titanium sleeves. The basic price is for stainless steel, all other sleeves are an optional extra. Some models can only be provided with certain sleeves. The T3 comes complete with hanger straps (where necessary) and link pipes or bolt-on caps (dependant on bike model). All silencers are oval unless otherwise stated.

Carbon tips are an optional extra for T3 and EVO2.

If the original equipment is a pair, then we will supply you with a pair.





The exhausts (they look like generic "one fits all" design) look great. Although, when you turn them end over end, they sound like an old rusted out muffler (like bits of metal are inside the housing). The KTM bits of the exhaust (bracket and adaptor) are poorly manufactured.



The bolt holes on the silencer inserts were so small. When removing the silencer inserts to inspect where the noise was coming from, I stripped the bolts. The assembler would have also damaged the bolts when screwing them in. So, first job was enlarging the holes and replacing the bolts.

The adaptor that connects the can and the exhaust pipe has internal



threads that are wonky. So when the bolts screw into them, they are also wonky



Before I bolted the adaptor to the exhaust piped, I applied some high temperature silicon on the mating surfaces. The exhaust pipe collars (that bolts onto the adaptor) has a gap between it and the adaptor of about 5mm. On the OEM exhaust, this bracket is flat again the exhaust. When the bolts are tightened up (it doesn't take much) these collars start to bend (I don't want to break them). So, I only firmed up the bolts (5-10 Nm ?) using Locklite 243. **(Any mechanics here ?. What's your opinion about this ?)**





The brackets (that support the can to the sub frame) are not compatible for my bike. The brackets look like they have been bent into shape using hands (not using a jig). No bolts/fasteners were provided. The tabs of the brackets would not fit into the mounting recess of the rack assembly (which first indicated they were not compatible). I filed them down to fit the shape of the recess (pictures above). Still no go... When fitted (the same why as fitting the EOM brackets), they cause the pipe to angle longitudinally, and the can sleeve was not able to fit into the adaptor (due to angle). Even if I was able to get the can on, and agreement from the bracket, there is no way the bracket could completely conform the can (ie: it's too big for the can), as the mount point spacer is too wide. So I played around with the bracket trying different mount points. Back mounting and then front mounting (ie: when the bracket tabs are clamped together). Using these methods, the bracket is too small for the can. I would then need to make a spacer.

After a few hours of giving the Quill designers the benefit of the doubt, it became clear that using the OEM bracket was the better bracket for the job. I elongated the OEM brackets at the point of the join. This has made the cans angle. It simplified the bending and I want to be able to revert my OEM brackets if I ever need to refit the original exhausts (ie: getting defected by the police). The can angle looks pretty cool, so all good 😊





I sourced some 5mmx50mm Neoprene strips from a local materials supplier (Clarke Rubber). It is rated to 90C. Should be fine. I cut out four 330x10mm strips out, and glued them into the brackets using black automotive silicon. 12 hours later, when fitting the cans to the rack assemblies, I used liberal amounts of WD40. This allowed the brackets to conform to the cans. Without it, the rubber would gripped into the cans and sheared off the brackets.



"Some gentle persuasion"



Running up and 15 minute reset. As the cans were heating up, water dripped from the bottom/forward join on each can. These cans don't look like they are sealed.. But anyway, this is a minor thing for me. A bit disappointing, but I can live with it.

A blat up the hill and back. They sound very nice. Inserts out: They much louder than my Akra's on my 06 Super duke. Slightly higher frequency, but very similar to the Akras, and same ability to set car alarms off and activate auto sensing porch lights (and all that wholesome stuff etc). With the inserts in, a bit quieter. They sound nicer with them in I reckon. They are slightly higher pitch with a slappy whip crack to them. My Akra's (inserts out) had a lower frequency punching thumpy/thuddy echoy muffled sound. I don't remember exactly what the Akra's sounded with the inserts in, but I remember not liking the sound. In my opinion, the Quills with the inserters in sound nicer than my Akra's with the inserts out... but anyway, they are gunna scare the kangaroos away and wake up dopey drivers. That's all I want out of them really.

Weight wise: OEM total weight: 9kg. Quill EVO2 Stainless: 5kg. I am



actually looking for weight as strange as that sounds (I'm a light guy).

This experience with Quill has been bullshit. Firstly the quality. The adaptor and brackets have been built by somebody who obviously doesn't give a shit. I would be embarrassed if I built this product. Secondly the difficulty of installation. When a product says it's "slip on", it should mean just that. If you're not handy/technical, then don't even bother.

The only good thing I can say about Quill regarding quality, is the box packaging was excellent.

Regarding mapping etc. I want to keep the current map as I like the fuel economy. I know 5/8th's of fk all about fuel tuning, but my knowledge of it is telling me to leave the silencer inserts in to maintain the exhaust back pressure - which is complimentary to them sounding better with them in anyway. I only notice a slight increase in power, but I can pop the front wheel in 1st, 2nd and 3rd when I gas it, so I'm happy with that. Just for some useless info: I measured the diameter of the OEM exhaust outlet (28mm) and my EVO 2 insert (33mm plus leaks).

Here's some pics of my bike with its cloths off.





KTM

6.7 FMF Q4

KTM Part Number: 045423



The Factory 4.1 is FMF Racing's premier performance exhaust. With 30 years of racing experience behind it, the Factory 4.1 takes advantage of everything we've learned on the race track.

Available in natural or blue anodized finish.

Horsepower gains throughout RPM range.

Available with titanium or high strength stainless steel mid pipe.

94dB Insert Included

Notice: For Closed Course Competition Use Only. Not Intended for Street Use.

Item ID: 045423

Type: Slip-On

Configuration: Dual

Const: Titanium

Finish: Natural

Endcap: Titanium

Quiet Insert: 94dB Insert (sold separately)

Weight: 7.8 lbs.

Just installed this on my 2011 SMT and the fit was perfect. Attaches to stock system just like the OEM one does. Same length as stock but a little smaller in diameter. Sound is probably less than one might expect due to fairly long length of cans. The optional sound baffle will take it nearly back to stock sound levels (but better throb). The pair weighs about 10 lbs, roughly half that of the stock cans. Seemed to work well with my totally stock SMT ECU mapping. Just a little popping on de-acceleration as one might expect without the SAS blocked. Gas mileage still about 40 mpg with this setup. Very happy rider





KTM



KTM



KTM

6.8 JC EXHAUSTS

<http://www.jcexhausts.co.uk/ktmforum.html>



Standard Oval
With standard outlet
Stainless Steel
Carbon Fibre
Titanium
Blue Flame Titanium



Catalytic converter option

Titanium and stainless cans can be supplied with catalytic

Converters fitted for an additional £195

These are high flow 200 cell density metallic three

Way catalytic converters for min back pressure and max bhp



<http://www.youtube.com/watch?v=t1gQb3TDaVk>

http://www.youtube.com/watch?v=7NRH_QgT3GA

Well cans arrived yesterday 😊 Aitch was a top bloke and always answered his phone. Got him to make me some tri oval full carbon

I think they look the dogs 😊.

Removed the heat shields, cans run cool. So going to order the SMR brackets to remove the pannier carriers as I have a hard luggage kit anyway.

Tried them with the baffles in, a bit too quiet for me 💡 took the baffles out a bit too loud for touring 😊 so spoke to Aitch who said drill out



the holes in the baffles to a bigger size to get something in between 💡 EASIER SAID THAN DONE boy that metal melted 3 of my drill bits TITANIUM 🤔 Anyway here are some pics,







KTM

7 TUNING SMR / SMT

7.1 TUNING & MAPS

[Power Commander 5 & Tune ECU custom maps](#)

Post all your custom made PCV Dyno maps here, or PM me & I will add them for you.

Unfortunately the sign of the times. The KTM 990 SMT forum or myself cannot be held responsible for any modification done to your own motorcycle, any modification you under take is your own responsibility, we are not liable for any claim from the mods or fuel maps listed on this forum. The use of these PCV & Tune ECU HEX maps are at your own risk, it is always advised to get a professional tuner to tune your bike.

PCV Download link for the below maps

[http://www.4shared.com/dir/lsvMzgw/PCV ... SMR_5.html](http://www.4shared.com/dir/lsvMzgw/PCV...SMR_5.html)

Colour BLUE = Standard air box

Colour RED = Modified air box

#1/ 2009-2010 KTM 990SMT European model 12/2012

M18-005-502

2010 Akra map loaded with tune ECU

JC Slip-on exhausts - no baffle

Stock air filter

Made by Dyno jet UK mapped on the Dyno

#2/ **2010 KTM 990 Simon SMR UK 11/05/ 2012**

2011 Akra map loaded via Tune ECU, O2 sensors turned off.

Akra slip-ons

DNA Air Box MK2

2nd flies removed

Made in the UK mapped on the Dyno

#3/ **2010 KTM 990 SMR Kev 21.11.2011**

2011 Akra map loaded via Tune ECU, O2 sensors turned off.

Leovince slip-ons

DNA Air Box MK3

2nd flies & shafts removed

Made in Brisbane Australia mapped on the Dyno

#4/ 2009-2010 KTM 990SM

M18-005-001



Stock exhaust
Stock air filter
O2 eliminator fitted
Made by Dyno Jet USA

#5/ 2009-2010 KTM 990SM

M18-005-002

Leovince slip-ons
Stock air filter
O2 eliminator fitted
Made by Dyno Jet USA

#6/ 2009-2010 KTM 990SM

M18-005-504

Akra Full system baffles removed
MWR air box mod
O2 eliminator fitted
mapped 09-02-12 RR
Made by Dyno jet UK mapped on the Dyno

#7/ 2009-2010 KTM 990SM

M18-005-503

Thanks to last boy scout for this tune.
Akro Full system with baffles
MWR air box mod
O2 eliminator fitted
2nd flies and shafts removed
mapped 09-02-12 RR
Made by Dyno jet UK mapped on the Dyno

#8/ **Marks stage 3 map**

30/6/2012 Thanks Mark (TheFullMonty)

To be used with the 2011 Akra map

Tuned for RC8 stacks

1. Removed the SAS system and Secondary butterflies (I left the actuator rods in)
2. Fitted a pair of Wings cans and left the quiet baffles in
3. Switched off O2 sensors, SAS, secondary's and EPC)
4. Fitted a Power commander 5 with a zero map and a dual sensor auto tune
5. BMC air filter
6. Auto Tune map built 600m above sea level,@ 14C.
7. Ignition advanced between 80 to 100% throttle in the high rev range by Dynojet.
8. Built in Australia on 98 RON fuel mapped using a AT-300 auto tune

[Tune ECU Custom maps are stored here.](#)



[http://www.4shared.com/dir/3NkWRTnx/Tun ... 2009.html](http://www.4shared.com/dir/3NkWRTnx/Tun..._2009.html)

Colour BLUE = Standard air box

Colour RED = Modified air box

#1/ **KM626EU0802031Map reece 12.5.12.hex**

Custom Dyno map built in Brisbane Australia, Thanks Reece.

MH air box

MH 2nd flies installed

O2 sensors turned off

EPC turned off.

Akra slipons

Mapped on the Dyno

#2/ 27/5/2012 Thanks Mark (TheFullMonty)

MB AKRA PRE Autotune PCV (imported by Kev).hex

1. Removed the SAS system and Secondary butterflies (I left the actuator rods in)

2. Fitted a pair of Wings cans and left the quiet baffles in

3. Switched off O2 sensors, SAS, secondary's and EPC)

4. Fitted a Power commander 5 with a zero map and a dual sensor autotune

5. BMC air filter

6/ 2011 Akra map loaded, F/L trims set from 2000rpm to Zero so PCV map imports correctly.

7/ Auto Tune map built 600m above sea level, @ 14C.

8/ Ignition advanced between 80 to 100% throttle in the high rev range.

Built in Australia, using a AT-300 auto tune

#3/ **KM626EU1102001Map.hex Standard 2011 SMT SMR map**

Standard OEM factory 2011 SMT/SMR fuel map

#4/ **KM626EU1180231Map.hex 2011 Akra map**

All year 2009 to 2012 SMT/SMR with Akra pipes

Extended 2nd fly openings, richer map.

#5/ **KM626EU1002001Map.hex Standard 2010 SMR_ SMT map**

Standard OEM factory 2010 SMR/SMT fuel map

#6/ **KM626EU0802031Map reece 12.06.12_dikke.bambadoo.hex**

Thanks to bambadoo

Mods:

-CPR filter

-Akra cans

-32mm Db-killers

-2nd flies removed

-RC8 Stacks

Map made in Norway



viewtopic.php?f=13&t=3605&start=10

#7/ **Kev RC8 Stack MK3 16.9.12.PCV final.hex**

Made by Kevxtx using a PCV + Auto Tune At-300 & rechecked using Dynojet Wide Band Commander 1. Map tuned with single cylinder tuning.

Mods:

RC8 stacks

DNA MK3 air box

Leovince cans

2nd flies & shafts removed

Map 28/7/12 L trims turned off at 2000rpm 7% & above, F trims are completely tuned from approx 2000rpm 7% to 9750rpm 100%

O2 sensors turned off

EPC turned off

SAS blocked off

Rev limiter raised to 9750rpm

My throttle TPS voltage is set to 0.63 volts with the bike idling with the engine at operating temp.

Map built to 13:1 up to 5%, over 5% TPS 13.2:1 on 95 RON fuel.

Map built in Brisbane Australia at sea level, 22 degree C.

#8/**KM626EU0802031Map(2).hex**

Thanks spark01, 14.7.12

Fuel: 95 octane regular

Height: 23m above sea level

Outside temp between runs: 20-25 degree C

Gearing: 17 tooth sprocket front & 42 tooth sprocket rear

EPC disabled

SAS disabled

O2 enabled

Mods:

-CPR filter

-Akra cans

-32mm Db-killers

-2nd flies removed

-RC8 Stacks

123,6 Bhp @9198rpm (SAE) -> 125,3 Bhp (DIN)

106,0 Nm @7152rpm (SAE) -> 107,4 Nm (DIN)

Last fuel use 1:17,8 l/km @

Mapped on the Dyno

#9/ **Kev STD Air Box RC8 FINAL 19.8.12.hex**

Standard air box, standard air filter, snorkel installed.

Can be used with STD or RC8 stacks.

2nd flies & shafts removed.

Leovince pipes.

O2 sensors turned off.



EPC turned off.

Rev limiter 9750rpm

SAS Removed

Make in Brisbane Australia, sea level, 22 degrees C, 95 RON BP Fuel, mapped to 13:2.1 using a AT-300 auto tune

#10/ **Kev STD Stack MK3 Air box 01.09.12.PCV imported.final.hex**

Made by Kevxtx using a PCV + Auto Tune At-300. Map tuned with single cylinder tuning.

Mods:

Standard stacks

DNA MK3 air box

Leovince cans

2nd flies & shafts removed

O2 sensors turned off

EPC turned off

SAS blocked off

F/L switch turned off above 2000rpm

Rev limiter raised to 9750rpm

My throttle TPS voltage is set to 0.63 volts with the bike idling with the engine at operating temp.

Map built to 13:0 up to 1%, over 2% TPS 13.2:1 on 95 RON fuel.

Map built in Brisbane Australia at sea level, 20 degree C.

#11/ **Dave SMT Dyno Jet UK import 21.8.12.hex**

2009-KTM 990SMT – Individual cly tuned

Thanks to (Dave) last boy scout for this tune.

Base Map: Kev RC8.28.7.12.PCV imported.final.hex

Akra Full system with baffles removed

DNA MK3 air box

2nd flies and shafts removed

Standard stacks

SAS removed with blanking plates fitted

O2 eliminator fitted & disabled using TuneECU

EPC disabled

95 Ron fuel

TPS voltage warm engine 6.5v

Map built in the UK by Dynojet UK.

#12/ **KM626EU1102001Map.hex Standard 2012 SMT_SMR map.hex**

Standard OEM 2012 SMT SMR Factory fuel map

Other Tune ECU maps can be found at this link.

All the Tune ECU maps can be found here.

http://www.tomhamburg.net/KTM_Tune_list.html





7.2 SOFTWARE TUNNING PROGRAM TUNE ECU

<http://www.tuneecu.com/>

User manual

http://dc619.4shared.com/download/C5RrDUa6/TuneECU_1_9_Description_En.pdf

7.3 TUNE ECU CABLE NEEDED

<http://www.dualsportwarehouse.com/CJ-Designs-Tune-Ecu-Cables-For-KTM-Engines-TUNE-C-KTM.htm>



Extra accessories required for KTM if you build your own cable:

These parts can be readily bought off EBay at a low cost

Cable:

To connect TuneECU with the KTM ECU a custom-built adaptor cable is required (Fig 1)

To make up such a cable, the following components are required: (i) a diagnostic OBDII cable

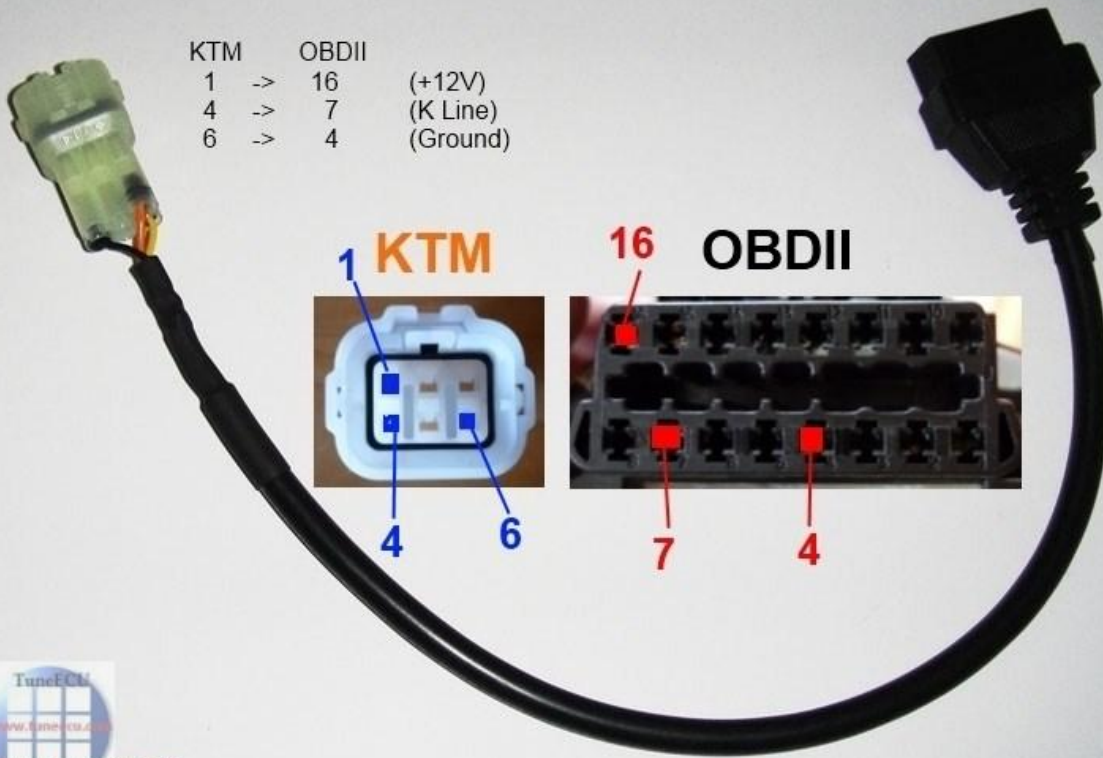
with a 16-pin socket on the one side and flying leads on the other (Fig. 2). This cable is commercially

available as an accessory in many OBD-motorsport shops (ii) a 6-pin connector (Fig.3).



Pin assignment :

KTM		OBDII	
1	->	16	(+12V)
4	->	7	(K Line)
6	->	4	(Ground)



KTM

Typical application for the sample connector in Fig.3:

- * 2006-2009 Yamaha YZF-R6 Secondary Injector harness (main harness side);
- * 2006 Yamaha YZF-R6 Injector harness (sub-harness side);
- * Honda CBR600RR Ignition wiring harness;
- * See Corsa Technic Motorsport Shop: <http://www.corsa-technic.com/> or EBay
- * Item Title: "6-Way Plug Kit (B6AP) Sumitomo type"
- * Price: US\$2.65 plus Shipping.
- * or [Tuning Center Otto Leirer](#) in 7442 Lockenhaus Austria, * Price € 3,50 plus Shipping
- * There is also a ready-configured cable, here's the [Link](#).

<http://www.stc-shop.at/index.php/connectors/ktm-adapterkabel.html>

Another source is the company [X-MAS Motorcycle Electrics](#) in Vienna
Item No. V-21330 ([multi-connector 2.2 mm 6-pin](#)) price at the time (March.2011) € 3.90,
shipping costs please contact X-MAS Motorcycle . Many thanks to Lars for this information.
[OBDII individual components](#)

Another source for a TUNE ECU CABLE KIT for the KTM engines, get e.g. here:

<http://www.cjdesignsllc.com>

And here another source in UK for a TUNE ECU CABLE KIT for the KTM engines:

http://www.zenoverland.com/bikebits/ktm_ecu_cable.html



Many thanks to Alain for the pictures.



There can occasionally be problems with connecting stability to KTM ECU's, e.g. with running engine.

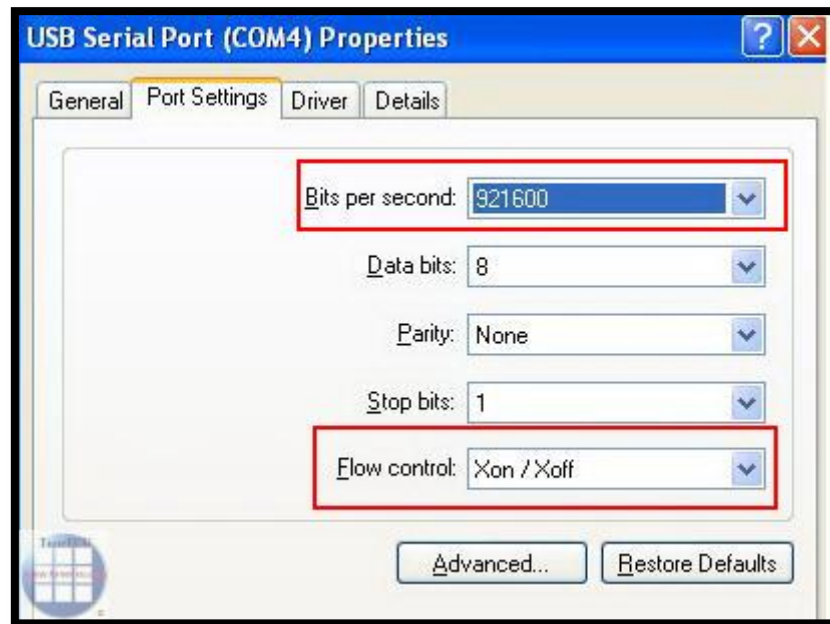
An improvement can be obtained, if you change the parameters for the virtual COM-port.

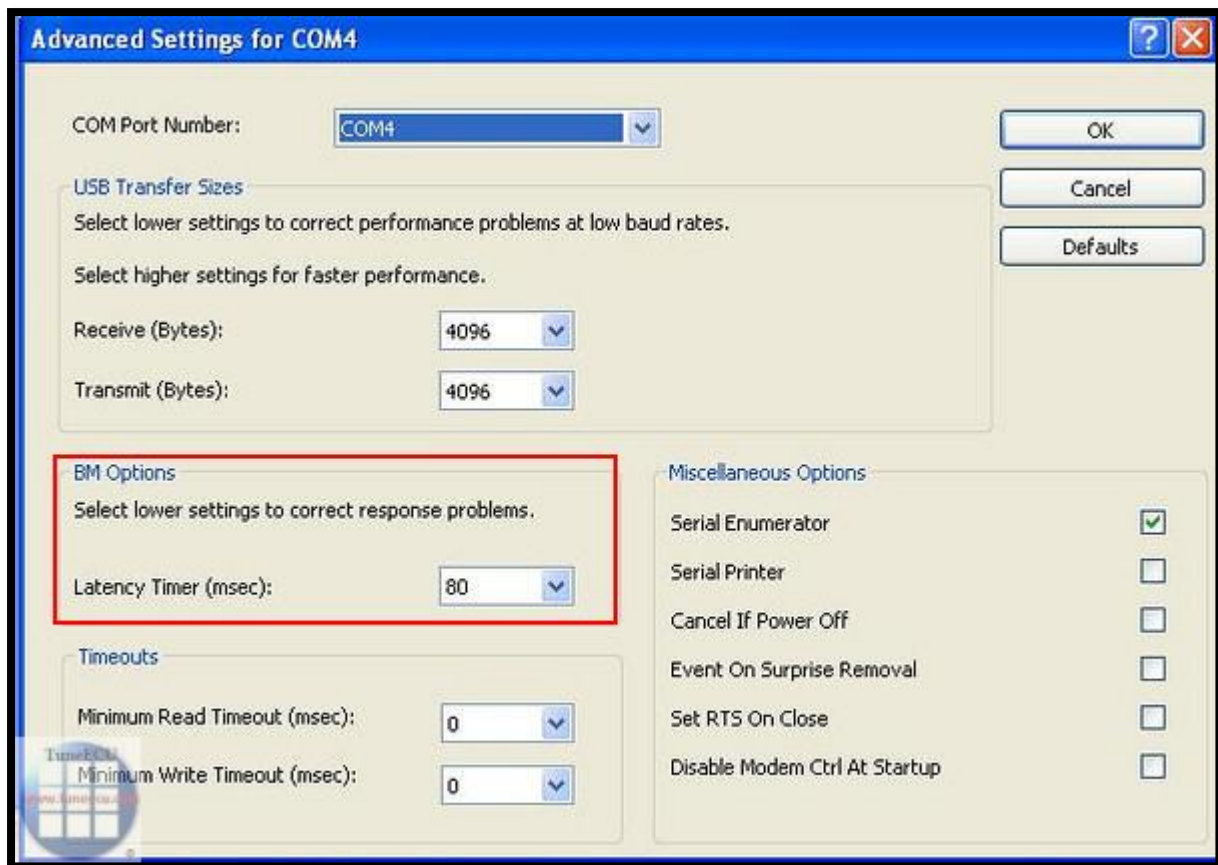
The following settings are only one example, which have helped many users.

It is possible these settings will not help all users, however; then some other parameters must be changed.

The following settings are made available courtesy of "Tuning Centre Otto Leirer" from Austria

Once again a big thanks to Otto





Another Tip, that can possibly help comes from "moto-abruzzo" from the Aprilia forum.
Link the cable shield with the ground pin of the OBD connector.
See the following picture.

Note: the picture shows the connection on **pin 5 for Aprilia**, KTM uses **pin 4 as ground**.

Known cable problems, dropping out when starting the bike.

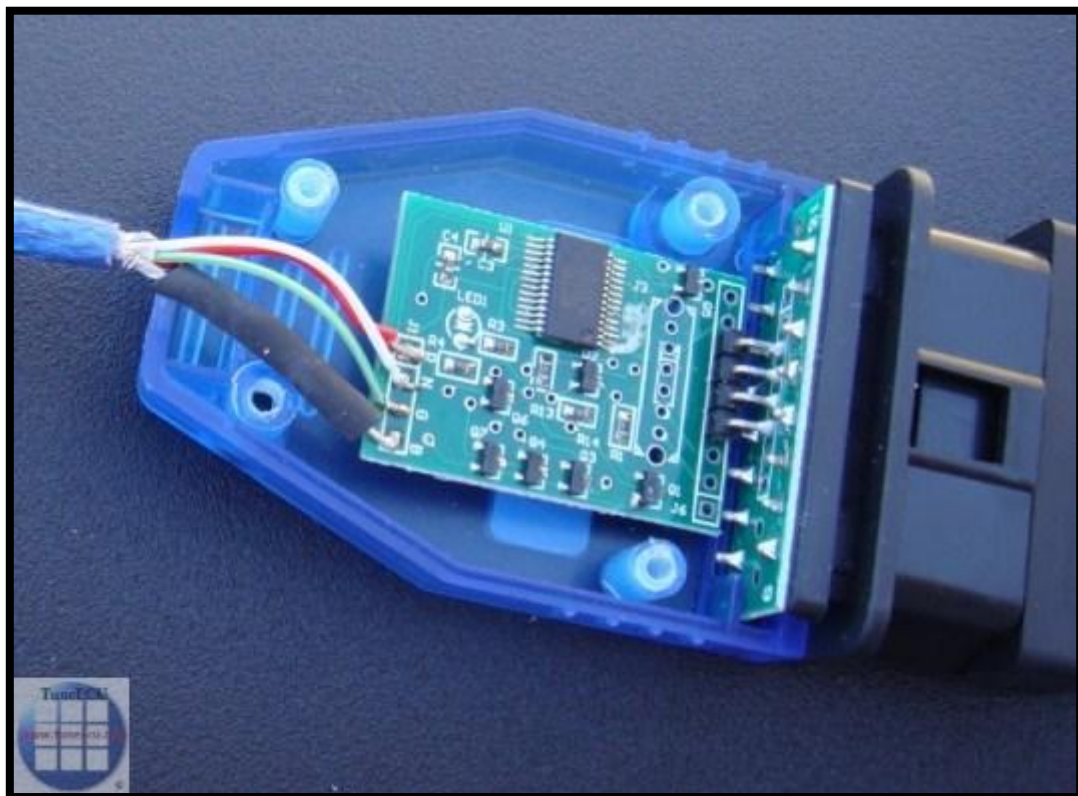
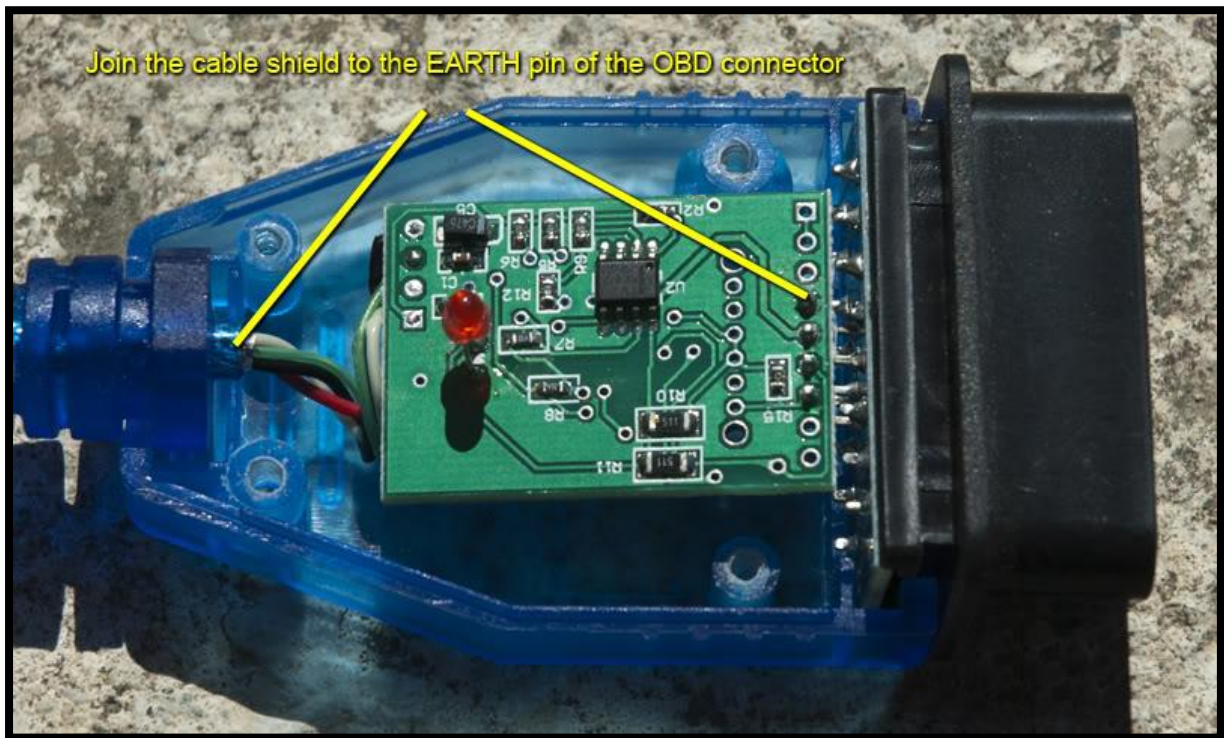
As for your cable dropping out there is a fix.

An issue came to light regarding TuneECU working fine with the engine not running, but dropping communications after a few seconds when the engine was started. It was noticed that the TuneBOY cable was earthed right the way through – USB shield to Molex, but that the TuneECU ones were not. Bridging the USB cable shield (Earth) to the back of the ODB connector completes the link. The cable is now continuously earthed – and TuneECU no longer drops comms.

There are two different VAG com cables that I know of that look different when opened up, just double check that you are using the correct terminal as the earth pin 4 on the cable mates with pin 6 on the KTM connector, my cable is the same as the photo below & the mod worked perfectly by joining the earth wire to the cable



shielding, it was a bit hard to solder to the shielding & had to use flux to get the solder to stick.



KTM

You can also de-soldered the cable, stripped it back a bit, joined the shield and the negative and soldered it all back on with some heat shrink around it.

You can also use a ferrite choke on the cable as you see here.



TuneECU would disconnected as soon as you started the engine, these 2 mods fixed the issue and now it stays on no problem.

7.4 FITTING A PCV POWER COMMANDER

Power commander V

SKU: 18-005

Note: Includes Ignition adjustment

Additional switch, you can use any toggle switch

PCV Map Switch

SKU: 76100011





A great tuning tool for building custom maps, I have been using their products for over a decade.



18-005

PCV F/I 09,KTM,990 SM

FUEL INJECTION MODULE

- **EASY TO INSTALL**
- **INCREASED THROTTLE RESPONSE
& ACCELERATION**
- **INCLUDES "DUAL PROVEN" MAP DATABASE**
- **USER FRIENDLY SOFTWARE**



[POWER COMMANDER V]

2009-2011 KTM SMR / SMT990

Installation Instructions



PARTS LIST

- | | |
|---|------------------------|
| 1 | Power Commander |
| 1 | USB Cable |
| 1 | CD-ROM |
| 1 | Installation Guide |
| 2 | Power Commander Decals |
| 2 | Dynojet Decals |
| 2 | Velcro |
| 1 | Alcohol swab |
| 2 | O2 Optimizer |

THE IGNITION MUST BE TURNED
OFF BEFORE INSTALLATION!

YOU CAN ALSO DOWNLOAD THE
POWER COMMANDER SOFTWARE AND
LATEST MAPS FROM OUR WEB SITE AT:
www.powercommander.com

PLEASE READ ALL DIRECTIONS BEFORE STARTING INSTALLATION

Dynojet

2191 Mendenhall Drive North Las Vegas, NV 89081 (800) 992-4993 www.powercommander.com

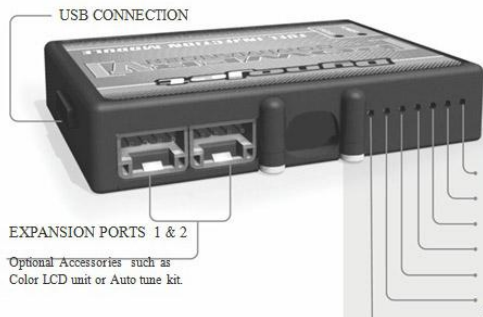
18-005

www.powercommander.com

KTM SMR/SMT PCV - 1



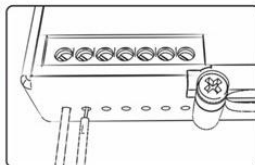
POWER COMMANDER V INPUT ACCESSORY GUIDE



Wire connections:

To input wires into the PCV first remove the rubber plug on the backside of the unit and loosen the screw for the corresponding input. Using a 22-24 gauge wire strip about 10mm from its end. Push the wire into the hole of the PCV until it stops and then tighten the screw. Make sure to reinstall the rubber plug.

NOTE: If you tin the wires with solder it will make inserting them easier.



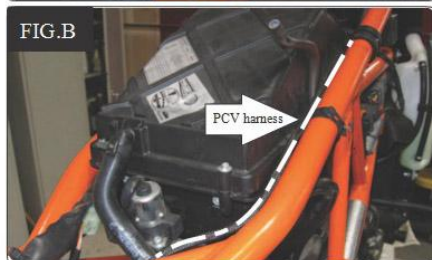
ACCESSORY INPUTS

Map -	The PCV has the ability to hold 2 different base maps. You can switch on the fly between these two base maps when you hook up a switch to the MAP inputs. You can use any open/close type switch. The polarity of the wires is not important. When using the Autotune kit one position will hold a base map and the other position will let you activate the learning mode. When the switch is "CLOSED" Autotune will be activated.
Shifter-	These inputs are for use with the Dynojet quickshifter. Insert the wires from the Dynojet quickshifter into the SHIFTER inputs. The polarity of the wires is not important.
Speed-	If your application has a speed sensor then you can tap into the signal side of the sensor and run a wire into this input. This will allow you to calculate gear position in the Control Center Software. Once gear position is setup you can alter your map based on gear position and setup gear dependent kill times when using a quickshifter.
Analog-	This input is for a 0-5v signal such as engine temp, boost, etc. Once this input is established you can alter your fuel curve based on this input in the control center software.
Crank-	Do NOT connect anything to this port unless instructed to do so by Dynojet. It is used to transfer crank trigger data from one module to another.
Launch	This input is intended to be used as a launch control. You can set a target RPM to limit the bike to when the clutch lever is activated. Once the clutch lever is released full RPM can be achieved. This requires a wire be connected to the grounding side of the clutch switch and the other end into this input.

18-005

www.powercommander.com

KTM SMR/SMT PCV - 2



- 1 Remove the seat, both side fairings and chin fairing.
- 2 Prop the fuel tank up.
- 3 Lay the PCV in the tail and route the PCV harness along the frame going under the crossover section (Fig. A).

- 4 Continue routing harness along the right side of the frame on the right side of the air box (Fig. B).

Use the stock wire ties to secure the PCV harness in place

- 5 Locate the rear Ignition coil and unplug the stock wiring harness from the coil (Fig. C).

Rotate the coil stick 180 degrees so the connection is pointing to the right side of the motorcycle.

18-005

www.powercommander.com

KTM SMR/SMT PCV - 3



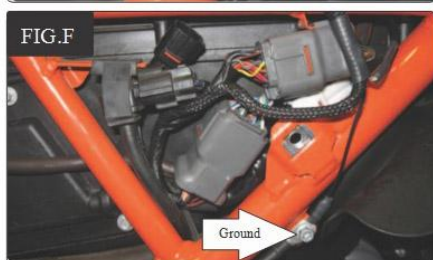


- 6 Plug the connectors from the PCV with the BLUE wires in-line of the stock ignition coil and stock wiring harness (Fig. D).



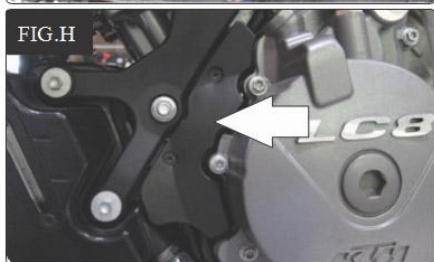
- 6 Locate the sub connector from the throttle bodies on the right side of the motorcycle. Unplug this connector.

This is a GREY 16 pin connector (Fig. E).



- 7 Plug the PCV in-line of the stock wiring harness (Fig. F).
- 8 Attach the ground wire from the PCV to the ground lug location on the right side of the frame





9 Locate the front Ignition coil and unplug the stock wiring harness from the coil (Fig. F).

10 Plug the connectors from the PCV with the GREEN wires in-line of the stock ignition coil and stock wiring harness

11 Remove the black, plastic cover on the left side of the engine (Fig. H).

12 Unplug the Crank Position Sensor (Fig. I).

This is a 2 pin connector. It white on the Male side and Black on the female side.





FIG. J

- 13 Plug the PCV in-line of the stock CPS and wiring harness (Fig. J).
- 14 Reinstall plastic cover.



FIG. K

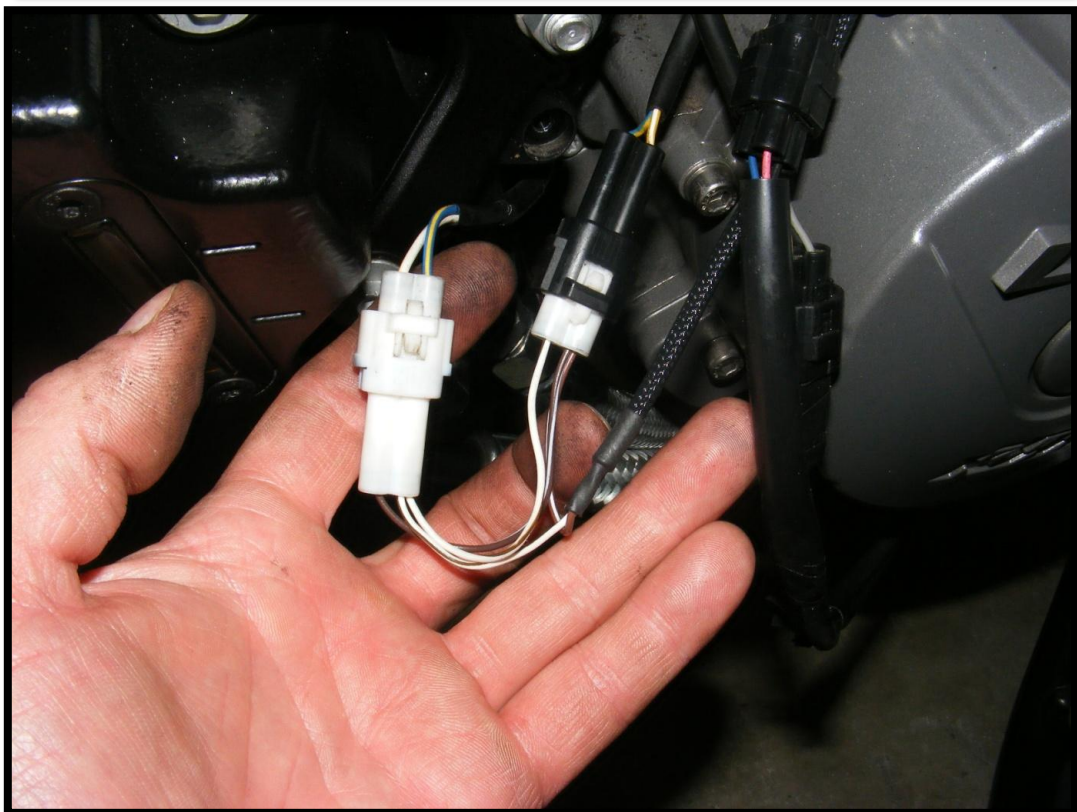
- 15 Locate the front O2 sensor connection on the left side of the engine by the oil lines (Fig.K).
- 16 Plug one of the Dynojet O2 Optimizers into the stock wiring harness.
The stock O2 sensor will no longer be connected to anything.

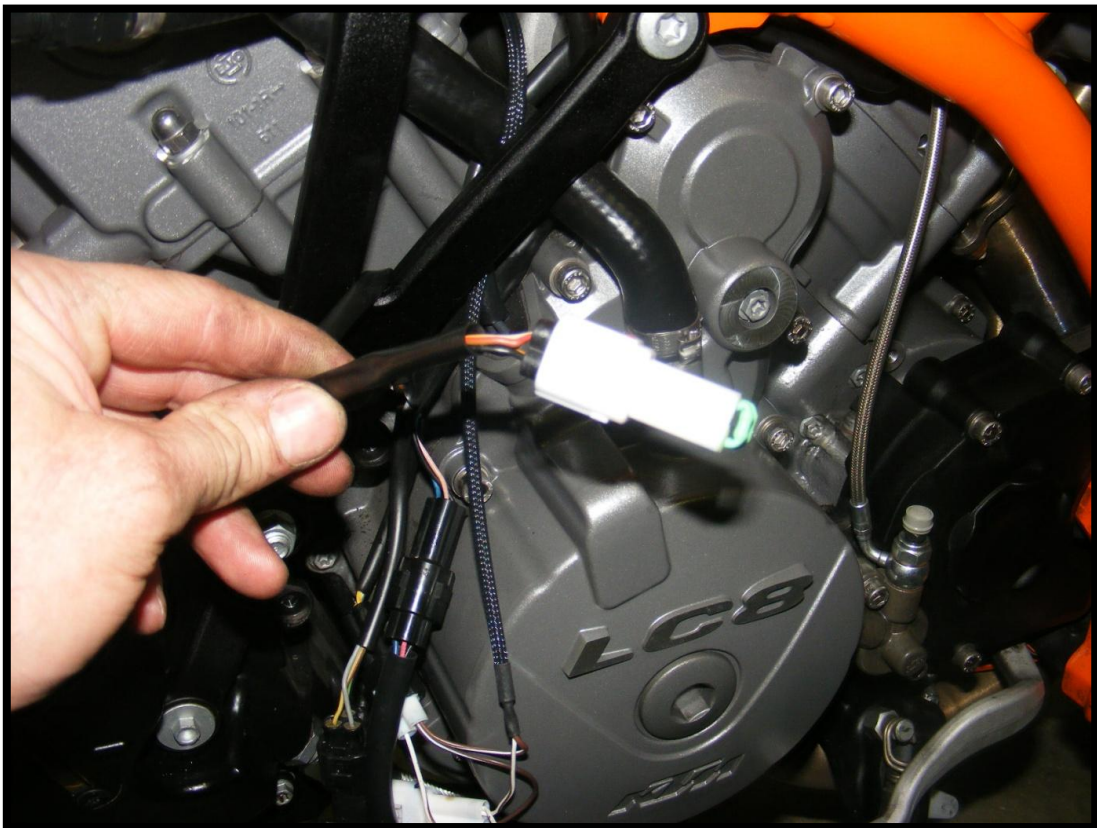


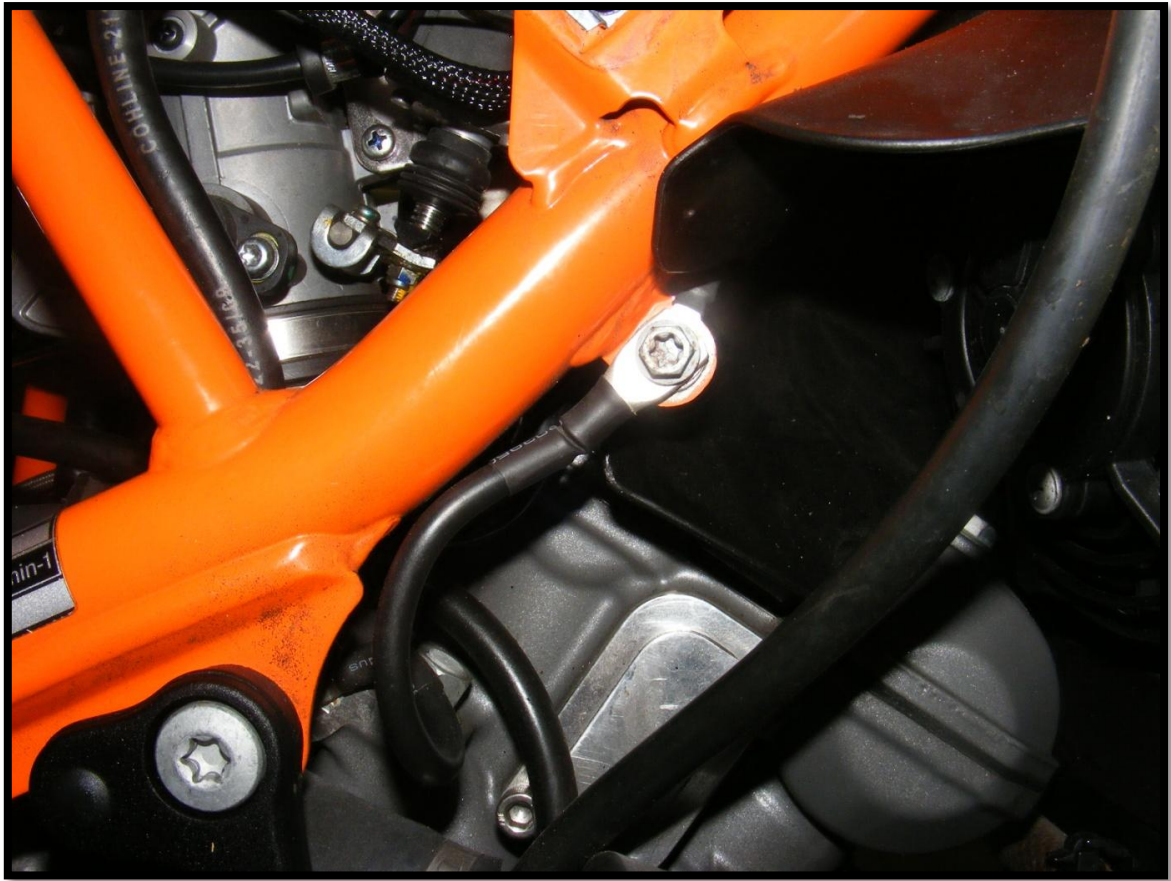
FIG. L

- 17 Locate the rear O2 sensor connection on the right side of the engine (Fig.L).
- 18 Plug one of the Dynojet O2 Optimizers into the stock wiring harness.
The stock O2 sensor will no longer be connected to anything.

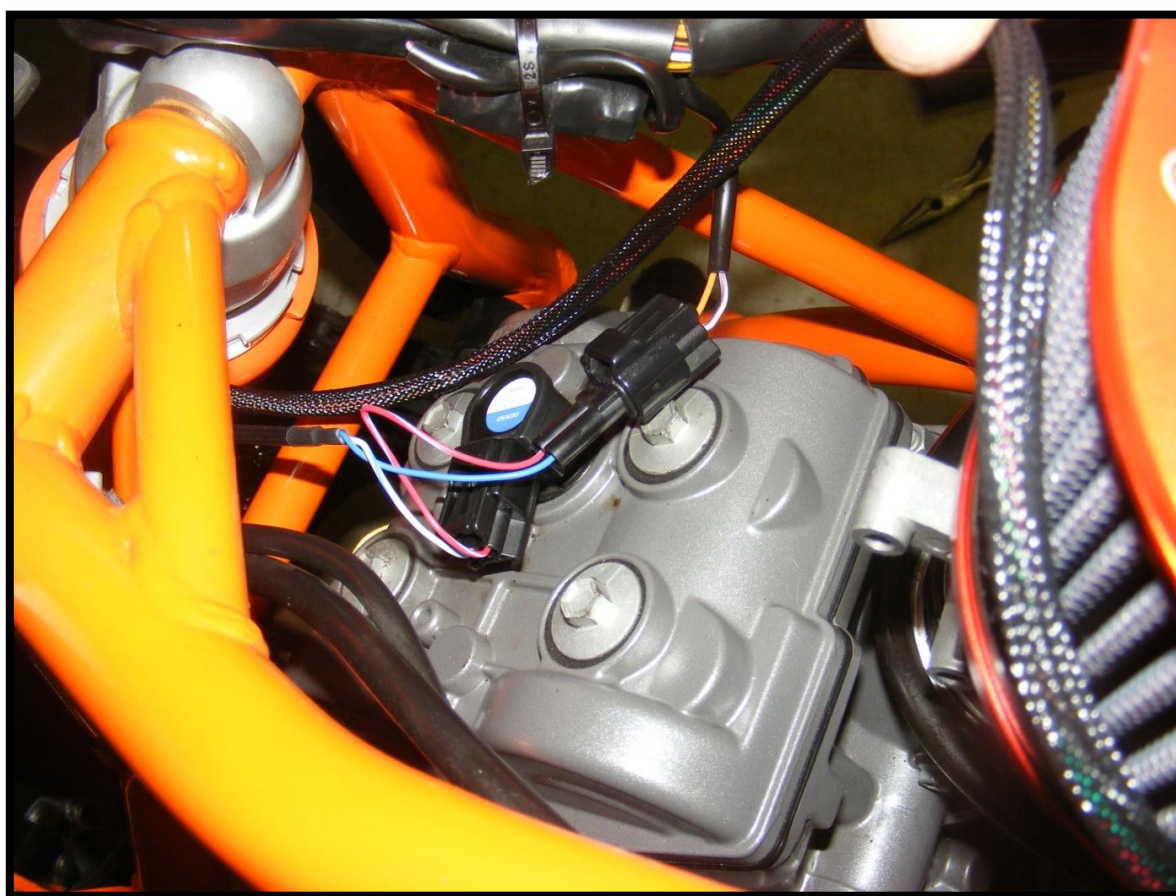
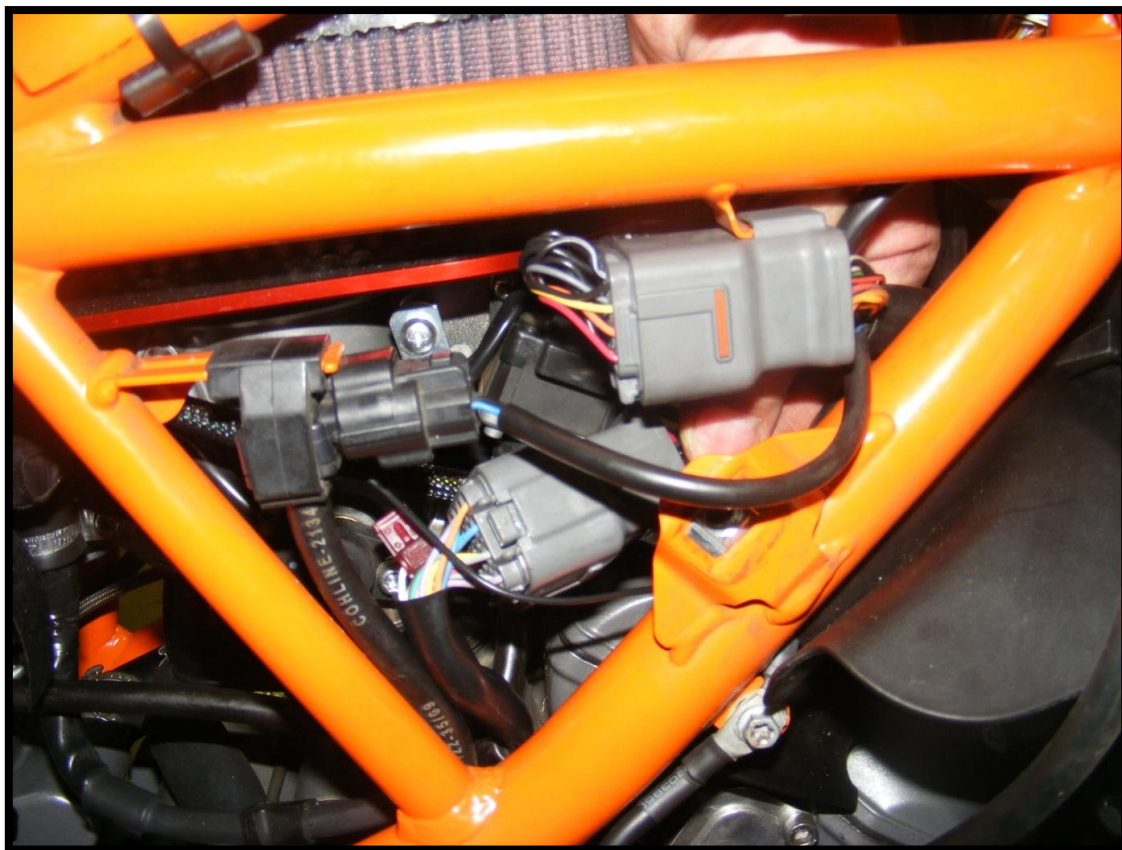
Some clearer photos on my bike



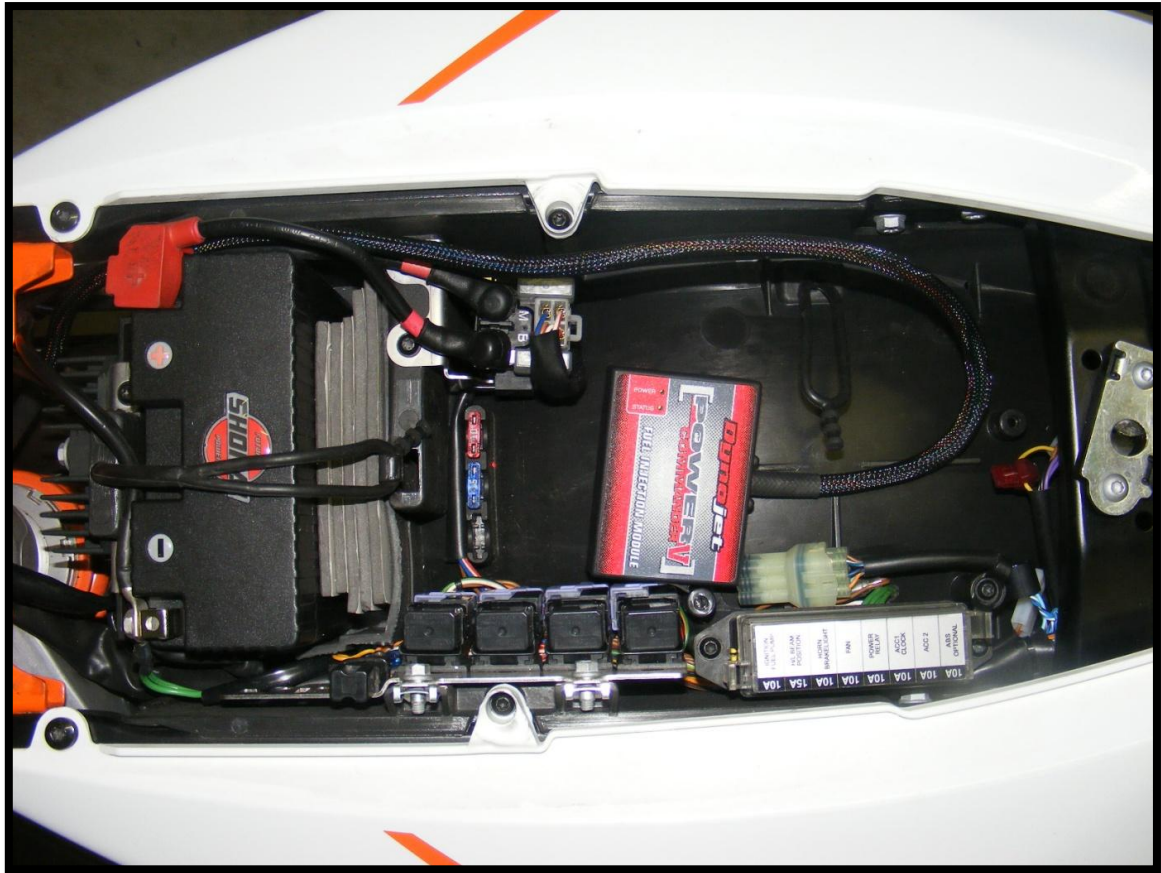




KTM



KTM



7.5 DYNO CUSTOM MAP

To get your custom single cylinder Dyno map you will need to cut the holes bigger to fit the Dyno's O2 sensors. There are two ways to do this by remove the whole exhaust & grind the lip out of the O2 bungs so the O2 sensors would fit for the single cylinder tuning.





KTM



If you want to remove the lip with the header in place you can do it like this before heading to the Dyno. You will need to remove the cans if you do it this way to blow all the metal out of the headers.

Or you can use a metal cutter cutting both hole bigger in place.





KTM



7.6 FITTING A AT-300 AUTO TUNE

I wired up the O2 sensor wires to the Auto Tune you can't go wrong unless you are colour blind, then connected the Can bus lead between the PCV & Auto Tune, fitted the CAN bus terminal bridge to the Auto Tune, soldered the earth terminal to the neg wire & fitted it to the battery neg terminal, made the positive red wire longer by 500mm & connected it to the tail light yellow wire. I also made up a on/off switch so I can turn the Auto Tune on & off. Finally I fitted the PCV & Auto tune together in a rubber glove to keep them out of the elements.

I then went into the PCV software screen & enabled Auto Tune & selected 2 cylinders. I fitted an Auto Tune so I can build my own PCV fuel maps, the AT-300 has 2 X O2 sensors so it can build 2 fuel maps one for each cylinder.

Dynojet Auto Tune kits for Power Commander V

Product Overview

Don't have a Dyno tuning centre nearby? Are you more of a D.I.Y. (do it yourself) type? Are you constantly changing parts on your bike?



If you answer "yes" to any or all of the questions above, then our Auto Tune kit is for you. The Dynojet Auto Tune kit is an "add on" accessory that can be used with any of our Power Commander V's.

It connects to the PCV with a single cable and requires only a ground and +12 volt connection to be made to install (Harley models include connector for plugging directly into the bikes' +12 volt line). If your exhaust does not already have one, a "weld in" O2 sensor bung is included.

"Well, how does it work and what does it do for me?"

We have taken virtually the same technology that our patented Tuning Link dynamometer software (for automated Dyno tuning) uses, along with Bosch Wide Band O2 sensors and miniaturized it to be used on your bike, ATV, or UTV, while you ride.

Once installed, the Auto Tune kit monitors the fuel mixture (by installing the included Wide Band O2 sensor in the exhaust). It then sends this information to the Power Commander V and automatically corrects it while you ride. Each map that we offer has preset Air/Fuel ratio values included that we find to be the best overall settings. This lets you simply plug in the unit and let it do the work. For Harley Davidson models we ever monitor and adjust each cylinder individually for increased precision as on these models required fuelling can vary significantly between the front and rear cylinder.

For advanced users that would like to change the Air/Fuel ratios from our baseline they are fully adjustable. Each throttle opening/rpm combination is individually adjustable, so that you can have both fuel economy, during cruise, while maintaining peak output at larger throttle openings. For most models of bikes it is also possible to adjust the Air/Fuel ratios "per gear". This gives you total control of the fuelling in every gear and throttle/rpm area if required.



	0	2	5	10	15	20	40	60	80	100
500	0	0	0	0	0	0	0	0	0	0
750	0	0	0	0	0	0	0	0	0	0
1000	0	0	0	0	0	0	0	0	0	0
1250	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13	13
1500	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13	13
1750	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13	13
2000	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13	13
2250	0	13.2	13.5	13.5	13.5	13.5	13.2	13.2	13	13
2500	0	13.2	13.7	13.7	13.7	13.7	13.2	13.2	13	13
2750	0	13.2	13.7	13.7	13.7	13.7	13.2	13.2	13	13

Auto Tune kits

Part #: AT-100

The first is a "dual O2 sensor" version made specifically for Harley Davidson models. It comes with two O2 sensors, two control modules, CAN connection cables, and custom length sensor cables. It also includes a built in power connector that plugs directly into the bikes' wiring harness for easy connection.




Part #: AT-200

The second version is a "universal fit", single O2 sensor kit. It can be used on any vehicle that has a PCV installed on it. It comes with a single O2 sensor, "cut to length" sensor cable, control module, O2 sensor "weld on bung" and CAN connection cable. It requires a ground and +12 volt connection be made using the supplied Posi-Taps.

Part #: AT-300

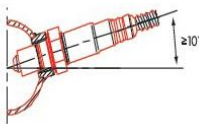
This Autotune Universal kit is designed for twin cylinder motorcycles/ATVs that use the Power Commander V allowing control of two cylinders simultaneously. The kit includes tow sensors and PCV connection harness.



The Auto tune kit is a universal product that can be utilized on any model using the PCV and which has a 12v power source.

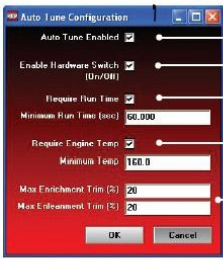
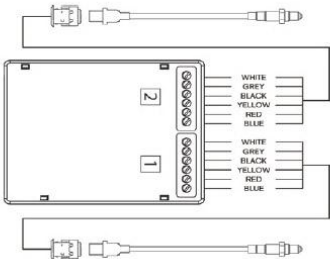
- Some stock and aftermarket exhausts come equipped with O2 sensor bungs. If your system uses a M18x1.5mm thread then you can simply use this location for the Auto tune sensors. If you have to drill a hole for a new bung (mild steel bung included), we recommend doing so before the catalytic converter (if applicable). It is recommended to position the weld bung /sensor approximately 6"-18" from the exhaust port of the cylinder.
- Mount the weld boss in a manner that reduces the risk of moisture contamination on the sensor. Condensation can build up in the exhaust pipes and potentially damage the sensor. Ideally, you should orient the weld boss so the sensor is between the 9 o'clock and 3 o'clock position. A 10° inclination off the horizontal plane should be considered a minimum.

Note: Verify you have adequate clearance for the sensor and wiring harness. Make sure the O2 sensor harness is as straight as possible. If you must secure the harness to keep away from danger make sure you do not squeeze the sheathing of the harness.



- Install the Auto tune module near the PCV.
- Connect the Auto tune module to the PCV using the supplied CAN cable. It does not matter what port the cable is connected to.

- Install the CAN termination plug into the open port of the Autotune module. *This is the small BLACK plastic connector in the kit.*
- Connect the O2 sensor cable to the O2 sensor and route the cable to the Auto tune module ensuring the cable will not get pinched or damaged by the exhaust. The cable can be trimmed shorter if desired.
- Connect the O2 sensor cable to the Auto Module. Repeat for other cylinder. #1 on the back of the Auto tune module refers to the front cylinder and FUEL TABLE 1 in the PCV software.
- Connect the BLACK wire from the AT300 to a good chassis ground using either one of the supplied Posi-taps or ring lug. The negative side of the battery is a good location.
- Connect the RED wire of the AT300 to a switched 12v source using the supplied posi-tap. The power for the tail light is a good location. Most PCV install guides will tell you the wire color for this location. The Auto tune can pull up to 5amps while the sensors are warming up.
- Block or disable the clean air injection system if applicable (see tech tips).
- The Autotune kit when used in conjunction with the PCV allows the bike to be automatically tuned to a target air/fuel ratio. To use this feature you must first enable Auto Tune in the PCV. Go to PowerCommander Tools - Configure - Autotune.



- Enables Autotune feature
- If using a switch (not included) check this box
- How much time after starting the engine the software waits until it starts sampling
- What temperature the engine needs to reach before the software starts sampling. (optional wiring needed to function)
- The maximum the software will trim per session



- Most maps from Dynojet will include a base Target AFR table. These settings are intended to deliver optimal performance while still maintaining decent fuel mileage in the cruise area (for most models).

To alter the AFR target click on Target AFR in the tree view. Expand each cylinder and/or gear if necessary to view the corresponding table. If necessary type in different values in the cells. Multiple cells can be highlighted by using click/drag with the mouse.

Shows current table being altered

	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250
0%	0	0	0	0	0	0	0	0	0	0	0	0
25%	0	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0
50%	0	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0
75%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
100%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
125%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
150%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
175%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
200%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
225%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
250%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
275%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
300%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
325%	0	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2

- It is recommended to load a base map into the PCV that best corresponds to your bikes current configuration. This will decrease the time in which it takes for the Autotune module to achieve its target air/fuel.
 - A switch can be wired into the PCV to be used to toggle between your base map and learning mode. Any SPST (open/close) type switch can be used. When the switch is OPEN the PCV will be running on the base map. When the switch is CLOSED the PCV will go into learn mode and Autotune will start making fuel trim adjustments.
- You can toggle between these modes at any time. The values learned for the fuel trims will be saved if you toggle back to the base map.
- After a riding session you can view the Trim table by clicking on the respective table in the tree view and clicking GET TABLE. To accept these trims and transfer them into the Fuel map click on Auto Tune - accept trims. This will zero out the trim table(s) and add the trim values to the base map(s).

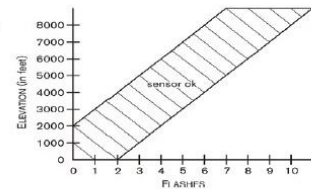
The PCV is configured to only allow the software to trim +/- 20% until you manually accept the trims. You can alter these limits in the Auto Tune configuration. The more the PCV learns the lower you can make this value. By lowering this value it will work as a safety net so if something should go wrong in the unit or bike it will not cause the bike to run poorly.

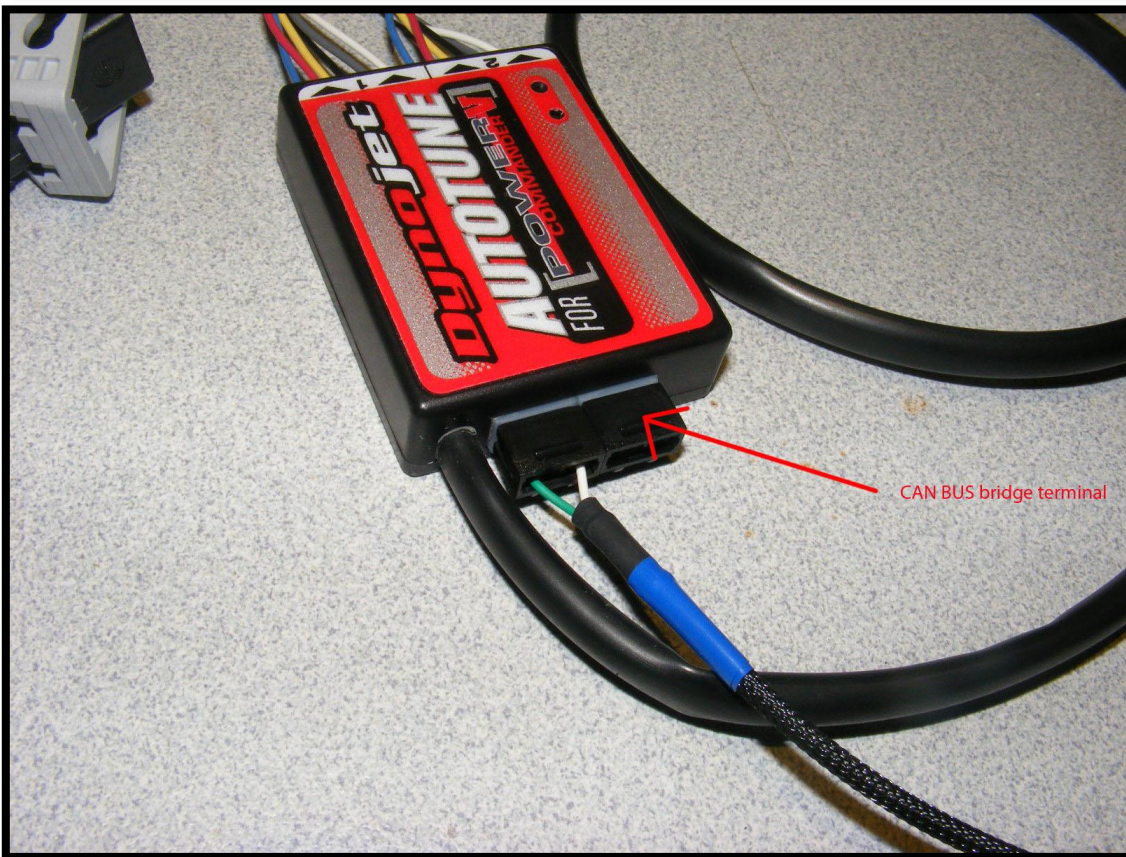
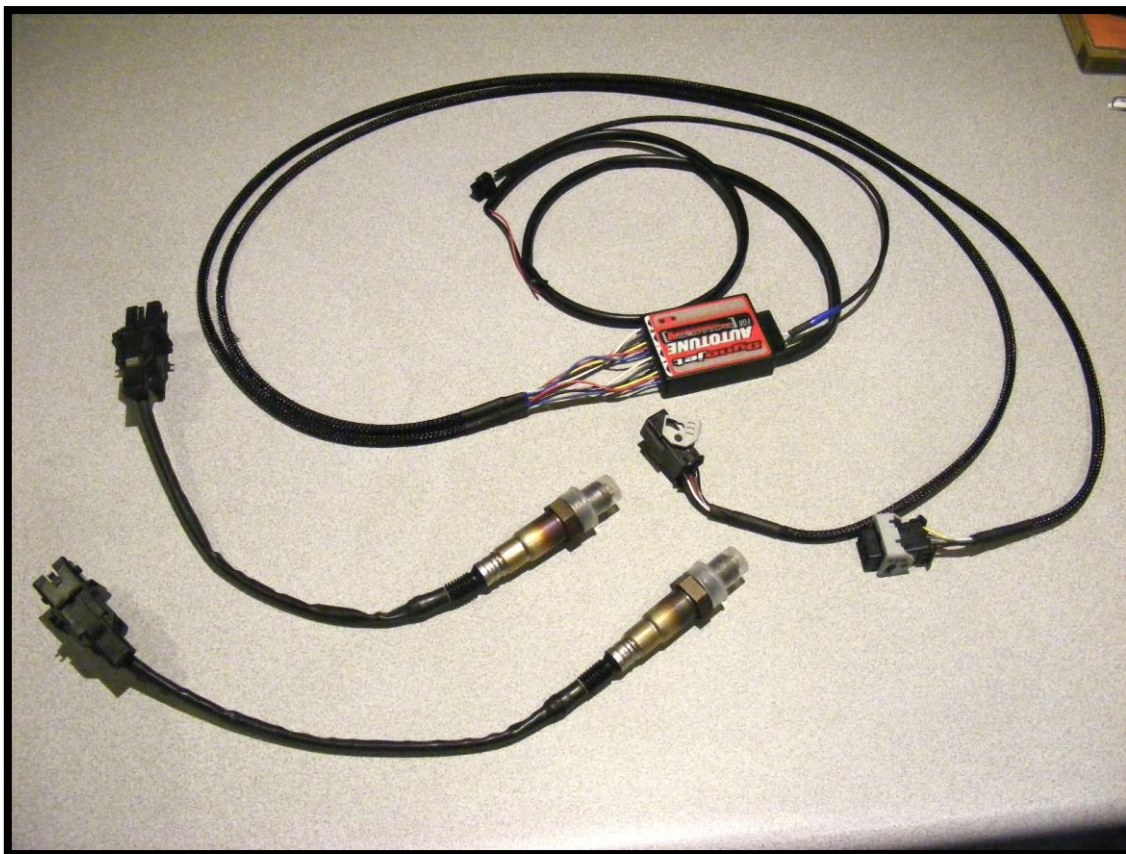
TECH TIPS

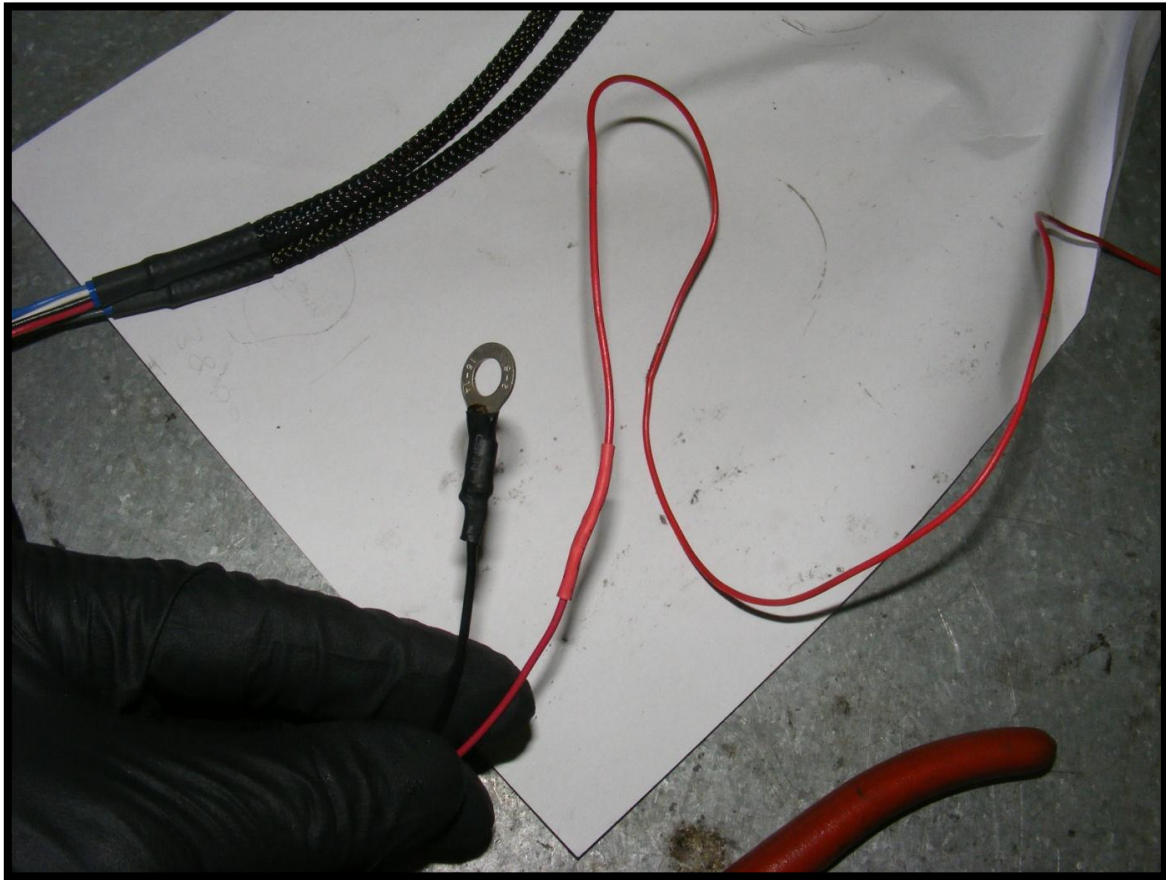
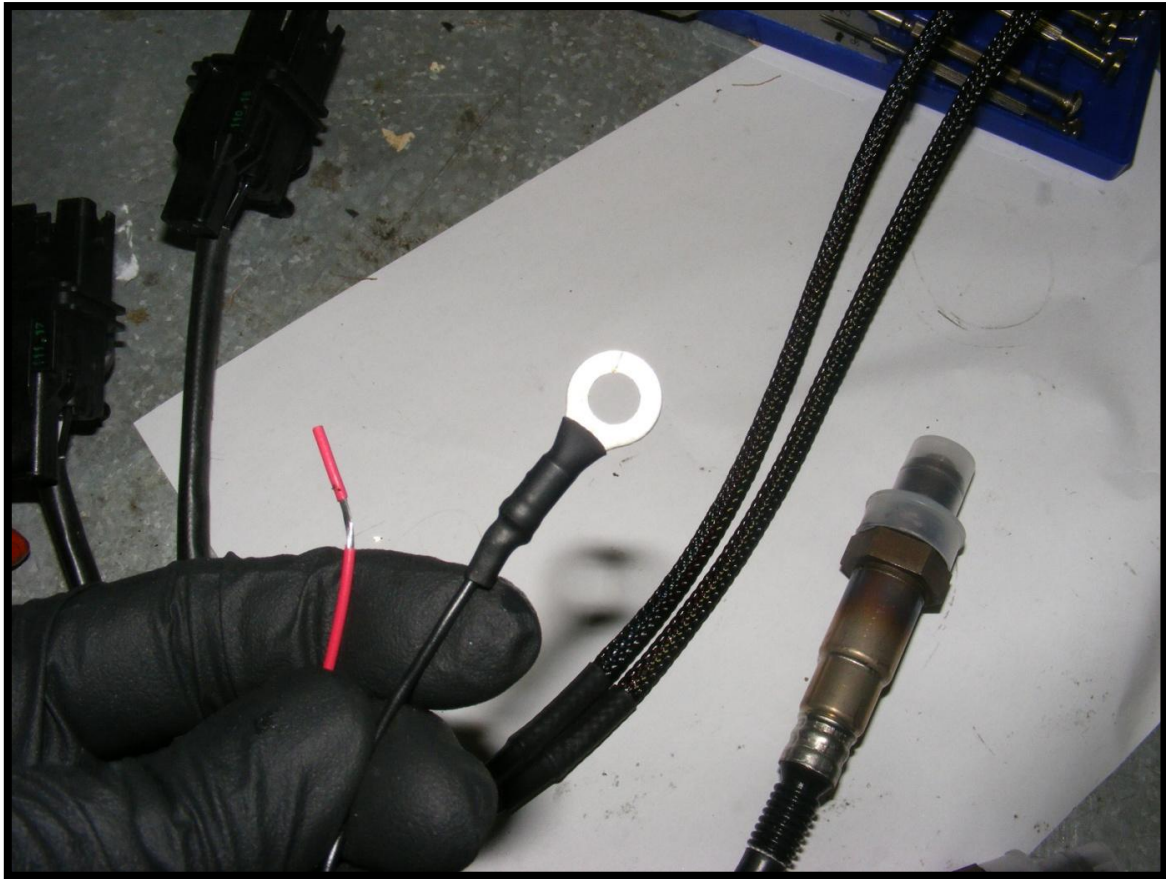
- If you should see abnormally high values in the trim tables then check the following:
 - Intake leaks
 - Exhaust leaks - check at all exhaust junctions
 - Sensor condition - (see sensor test)
 - Make sure the clean air system is blocked (if applicable). Also called the PAIR valve, the clean air system draws fresh air out of the air box and dumps into into the exhaust port to help ignite any unburnt fuel in the exhaust. This extra air will skew the AFR readings of the Auto tune module.
- Dynojet does not recommend inputting values in the 0% column of the Target AFR tables. If you should need to tune the 0% column to combat popping on deceleration input values directly in the Fuel tables.
- If fuel mileage is a concern then you can alter the Target AFR values in the cruise range. Dynojet considers the cruise range to be around 5-20% throttle. Dynojet does not recommend making the bike any leaner than 14.7 in the Target AFR cells.
- Dynojet has found that for the best compromise of fuel mileage and throttle response to set the cruise range to 13.7-14.0.
- For all other ranges 12.8-13.4 seems to work best. For the best results it is recommended to bring the bike to an Authorized Tuning Center to have them verify the AFR values.
- Make sure the sensor is not dropped or subjected to wet conditions. The O2 sensors used in this kit are a Bosch unit and do not come with any warranty.
- To verify that Auto tune is working you should see a real time AFR reading in the lower right hand corner of the software.
A value of 9.99 could indicate a faulty sensor or the sensor wired incorrectly to the module.
A value of 0.00 could indicate that the CAN termination plugs have not been installed or Autotune has not been enabled in the software.

O2 SENSOR TEST

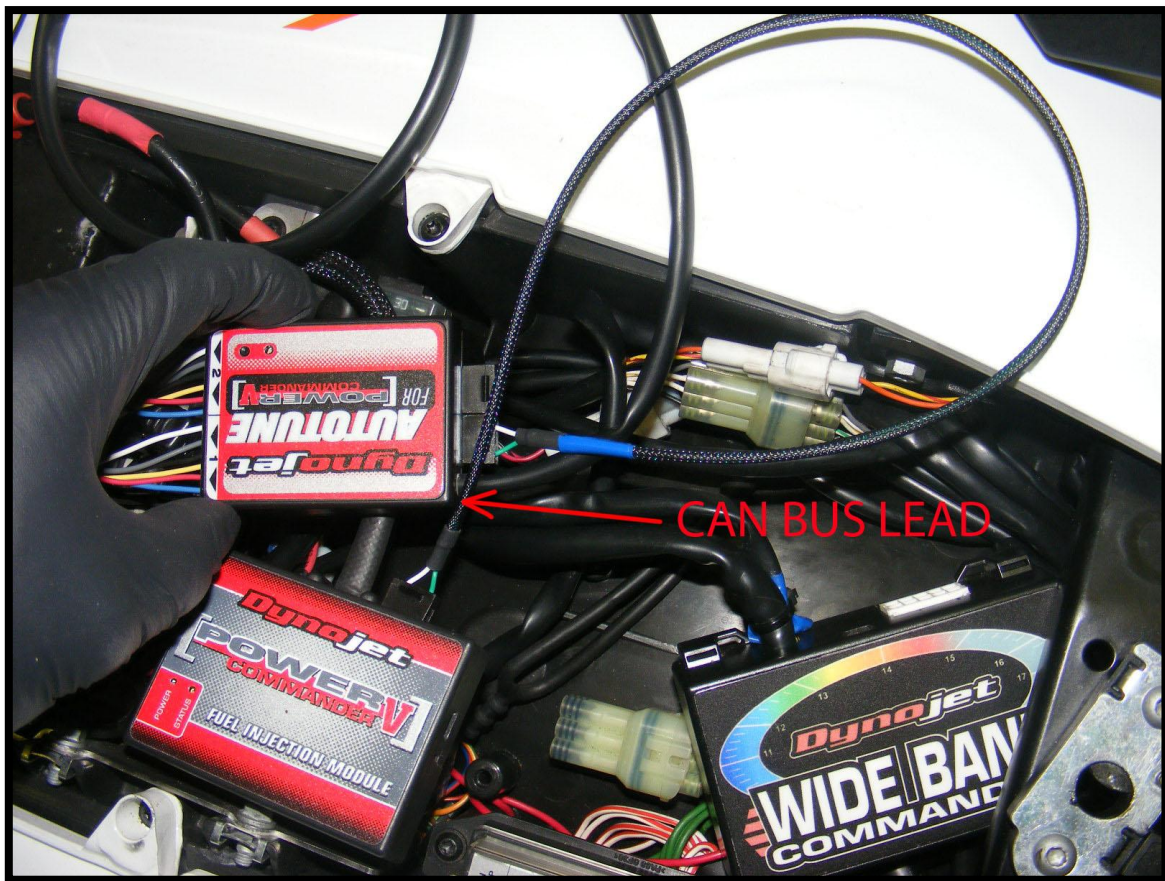
- The Autotune kit has a built in circuit which allows you to test the sensor accuracy and condition.
- Remove the sensor from the exhaust system and hold in ambient air.
- Verify the Autotune kit has been powered up for at least 1 minute.
- Press and hold the function button on the front of the corresponding
Auto tune kit for 3 seconds and release the button.
- The LED light will blink rapidly, pause for a moment, and then begin to flash.
- Count the number of flashes and refer to the chart.
- Retest the sensor if there is any question as to the purity of the air during the test.

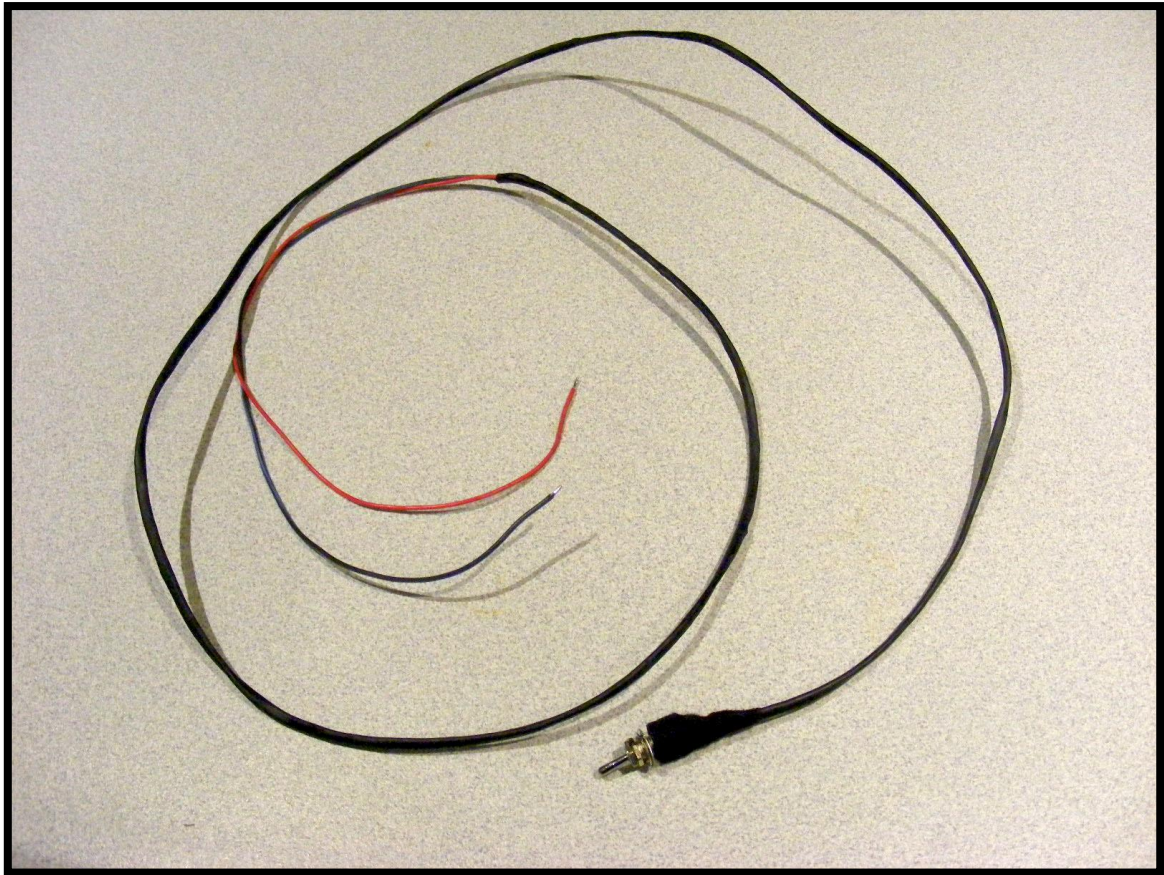




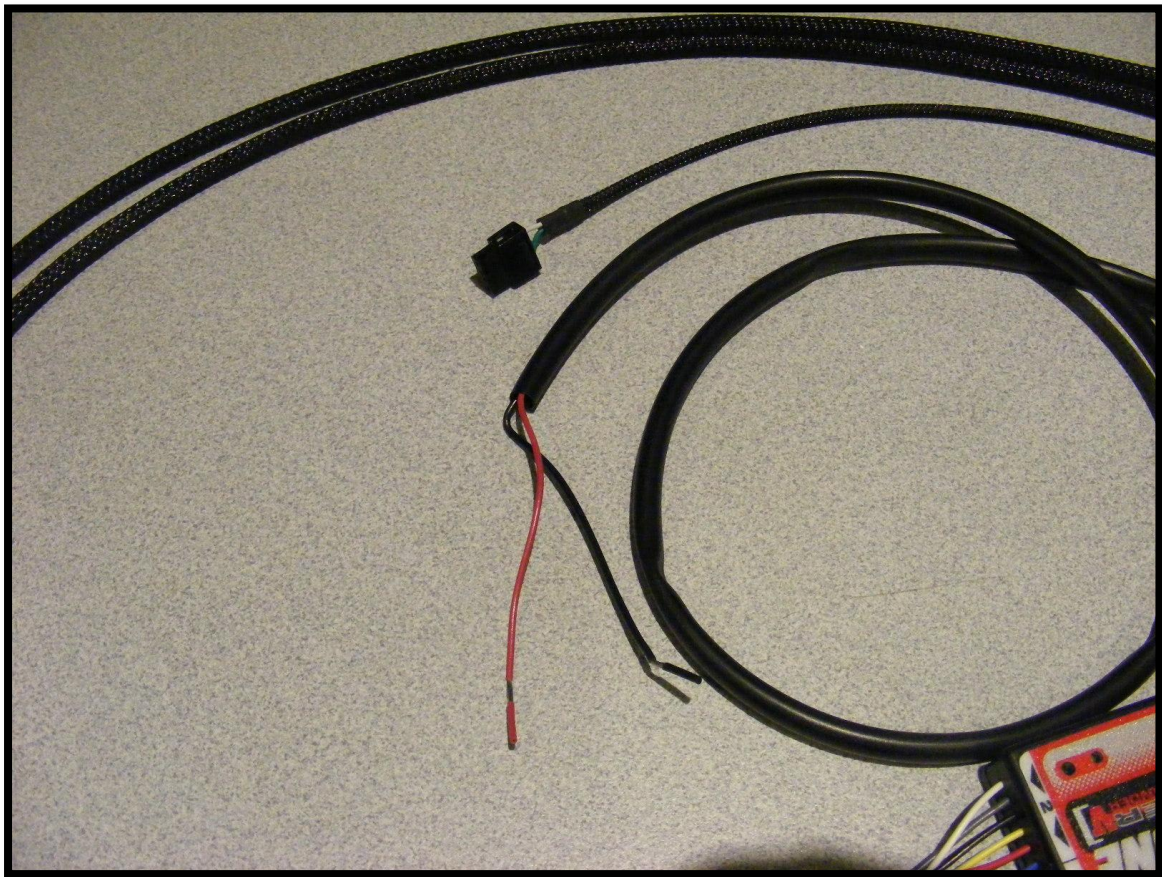
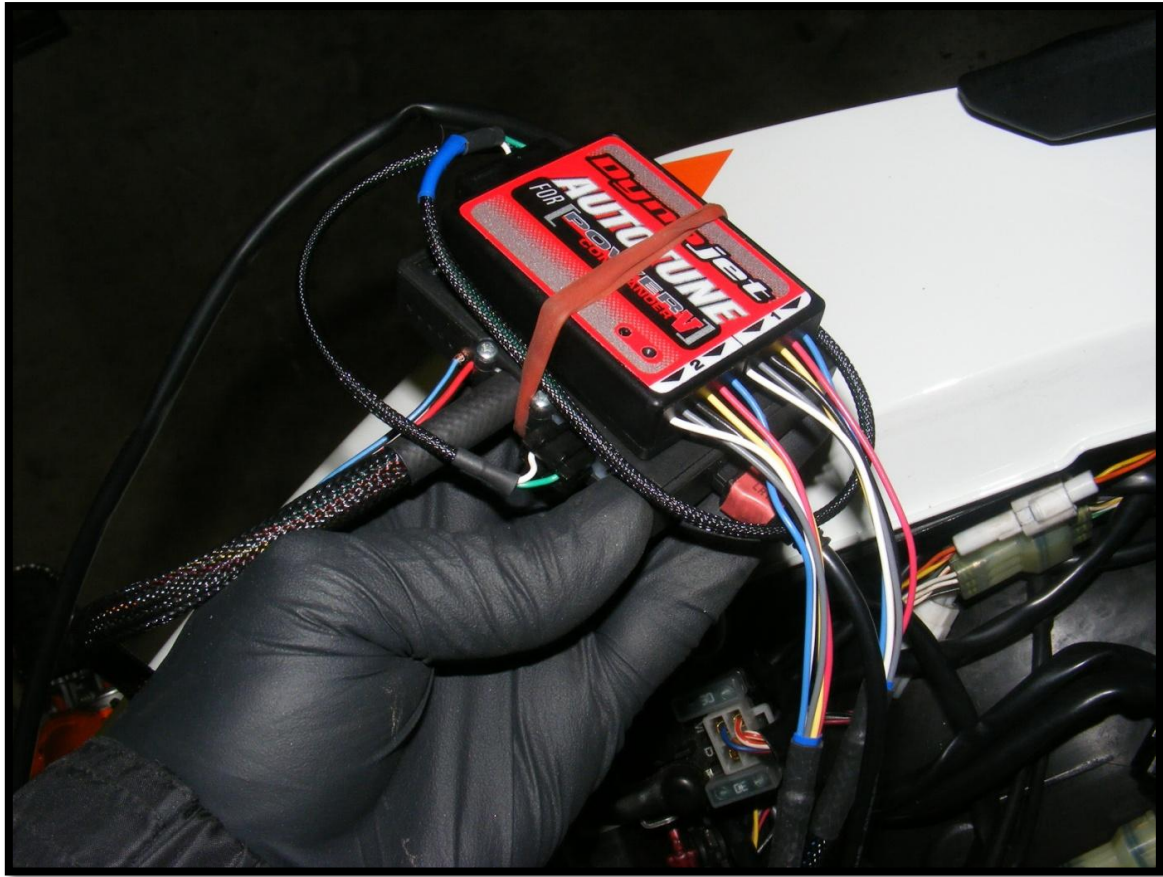


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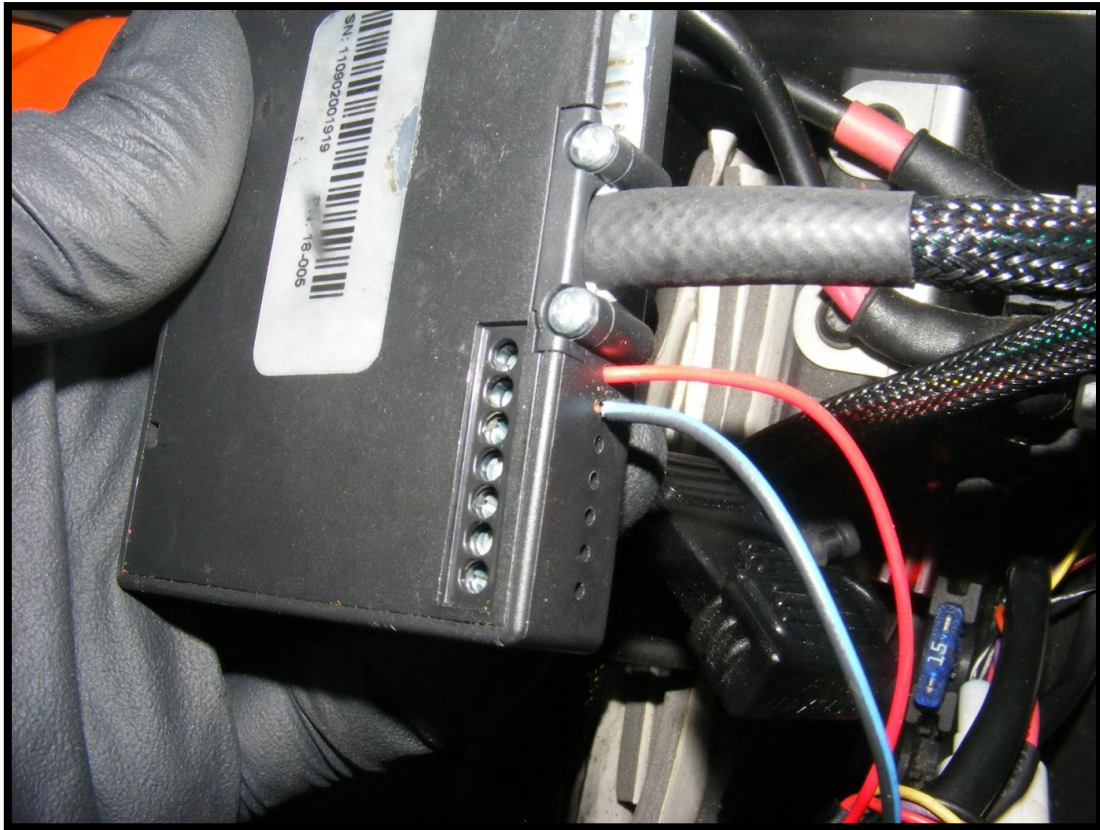




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You connect you On/Off Auto Tune switch here, it does not matter which wire goes where.





7.7 KTM SMT 990 CUSTOM TUNE, FITTED WITH WINGS EXHAUST, FULL ECU REMAP

Posted July 13th, 2012 in ECU Remap, KTM.

<http://bsd.uk.com/ktm-smt-990-fitted-with-wings-exhaust-full-ecu-remap/>

Nothing special about Wings Exhausts – just a good quality, well-fitting regular can, really – but we do have to say the ECU remap went very well on this particular SMT. Plugging in to the ECU we went through all the usual stuff; MAP (Manifold Air Pressure) map, the secondary butterfly valves' opening point, and ignition table (which is critical for improved feel at the throttle). Once we'd sorted out the emissions rubbish (mainly lambda sensors) we could then set about fuelling for the cans.

The upshot was a much more 'analog' feel when dialling in the gas, rather than the 'switchy', digital feel you get as stock with big V-twin KTM engines. A job well done, another happy Katoom owner, with a much more rideable bike...

7.8 KTM 990 SMT ECU REMAP – AN OWNER'S WORDS

Posted November 14th, 2012 in ECU Remap, KTM, Owner's Words.

Nat recently put his KTM 990 SMT in for a full ECU remap (travelling up from Somerset!) and has been kind enough to let us know what he thinks...

Hey



Had 250 odd miles on the bike now since the remap so thought I would give my thoughts;

I originally test rode the 990 SMT and decided at that point that the fuelling would be a pain to live with on a daily basis and started researching if it was solvable. Originally I found BSD's website, in particular the article for the MCN bike. Having picked my brand new bike from the dealer, I found that I very quickly started to dip the clutch coming on throttle and took to moto-x style fingers on the brake lever to get finer control of my right hand at low speed.

I did 2500 miles in under a couple of months and I have loved riding it. I did however realise in this time that I had simply adapted my riding to cope with the bike's very obvious snatchy and unpredictable throttle at low speed and an almost complete inability for it to hold a constant speed (before I hear your say "but it's a twin" my previous 2 bikes were a Tuono and a Firestorm, not to mention a 675 which I still have and has a pretty light throttle, none of which I have suffered these issues with). I took the time off and booked her in to go and see if the guys at BSD could work their magic. I arrived and within 2.5 hours the process was complete, I got pulled into to the workshop for a brief of what my SMT was showing on the dyno.

This proved a testament to why this process cannot be done by a "send them your ecu" style remap, as unlike most of the internet SMT grumbles of them running rich on the Akrapovic map, mine was in fact running lean! Furthermore, despite apparently the issues I have described being less evident on later bikes, mine was apparently one of the worst of the later generation bikes they had seen in the 50 odd bikes they have done this with.

So, process complete for what I considered to be a very reasonable cost, I set off for the long ride back to Somerset. 5 minutes after setting off – heavens opened, given that wet weather riding was one of the areas I had always been nervous of the throttle on this bike, I thought what better a test of the mod. Straight away, first few islands – I was finding that I could leave my left hand on my lovely KTM heated grips and return to control the bike on throttle alone, no hint of the unpredictability of the previous incarnation I had beneath me. Shortly after this I found myself having to filter for the best part of 3 miles down a dual carriageway – something else which I had previously found tiring due to constant clutch work and snatching, once again I found my hands toasty warm and firmly on the grips.

Finally, back in Somerset, and I thought I would complete my trip by getting off the dull stuff and go have a play – what a difference, straight away I felt it much more confidence inspiring in the slow speed corners, given the time of year and the large deposits of wet leaves, wet patches and tell-tail rainbows, I was still taking it easy, but still my eyes were no longer saucer like, great improvement once again.

So I guess, in summary, whilst you can ride this bike every day in standard form, I think it is worth every penny to make it the bike KTM should have supplied 😊

Cheers guys !!

Nat





8 AIR BOXES & AIR BOX MODS

8.1 DNA MK1, 2 & 3

The best in my eyes is the DNA MK1, 2 & 3 series.

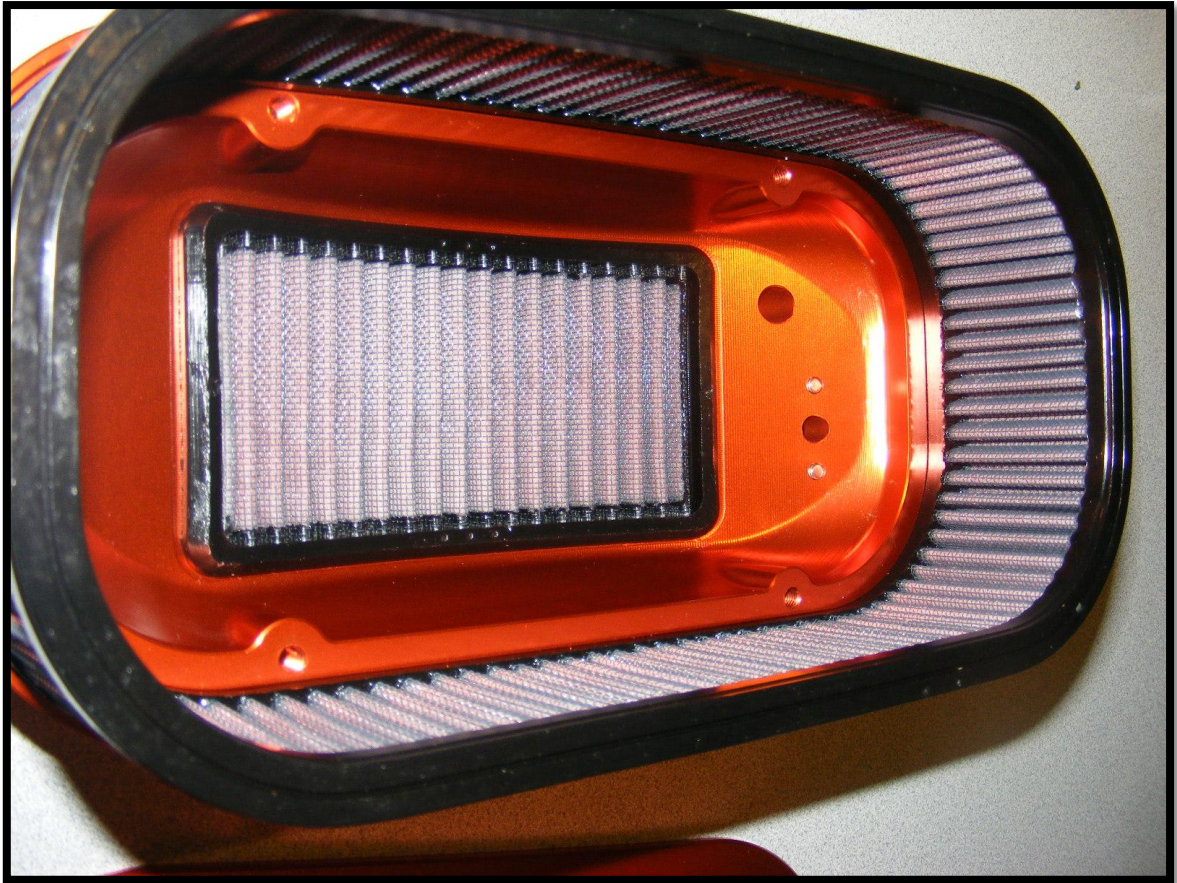
The air box base will fit the SMR & SMT, all 3 versions use the same air filter, the differences are in the lid heights, with the MK3 housing an extra filter in the lid.

http://dc408.4shared.com/download/usV1G-sE/DNA_S3_KTM990_2011.pdf

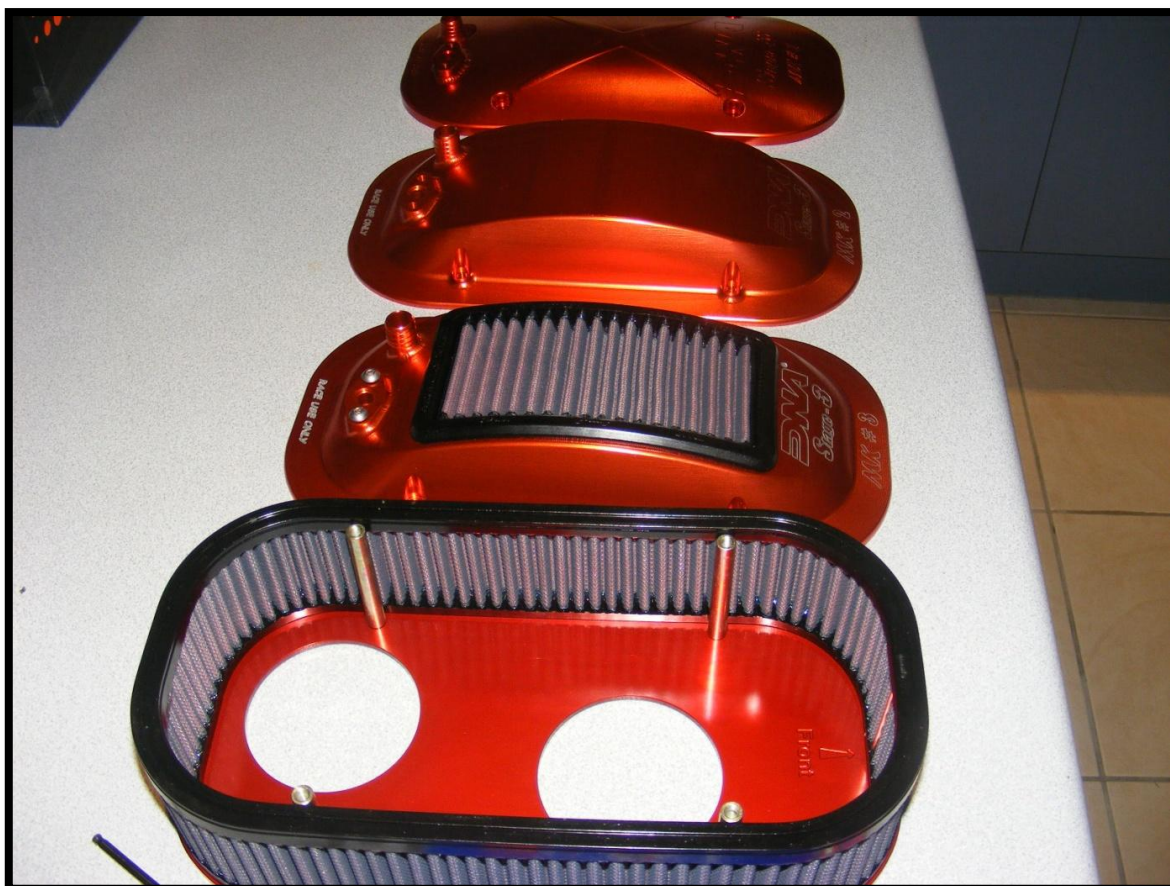






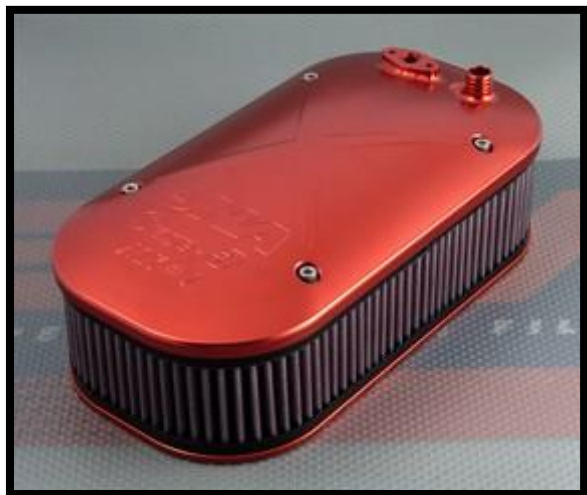


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8.2 MOTO HOOLIGAN



is another great air box with well renown service.

http://www.motohooliganperformance.com/store/index.php?route=product/product&product_id=49

Fitting instructions for a Super Duke

http://www.cwgsy.net/private/rick/MH_Airbox_V1_6.pdf





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Fitted a MotoHooligan air box yesterday (a huge thank you to Kev), this combined with removing the SAS and blanking it off with the MH blanking plates, the 2nd flies removal which Kev did for me a few weeks ago and Reece's map (thanks Reece) have refined my bike to as near to perfect as i could ever have hoped for. The power and the smoothness from 3500 to the redline is just amazing--the KTM supermoto sharpness and hooligan nature is still very much there but that snatchy power delivery is gone—I've been round a few roundabouts today without feathering the clutch. The only problem I have now is trying to keep that front wheel on the ground. I would give a big rap for the MH air box, very well made, excellent value, excellent service and it looks very sexy.





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8.3 CPR ROTTWEILER KTM 950 990 LC8 PRE FILTER

Another great bargain priced air box, Manufacturer: CPR Fab

<http://www.ktmtwins.com/rottweiler-ktm-lc8-pre-filter>

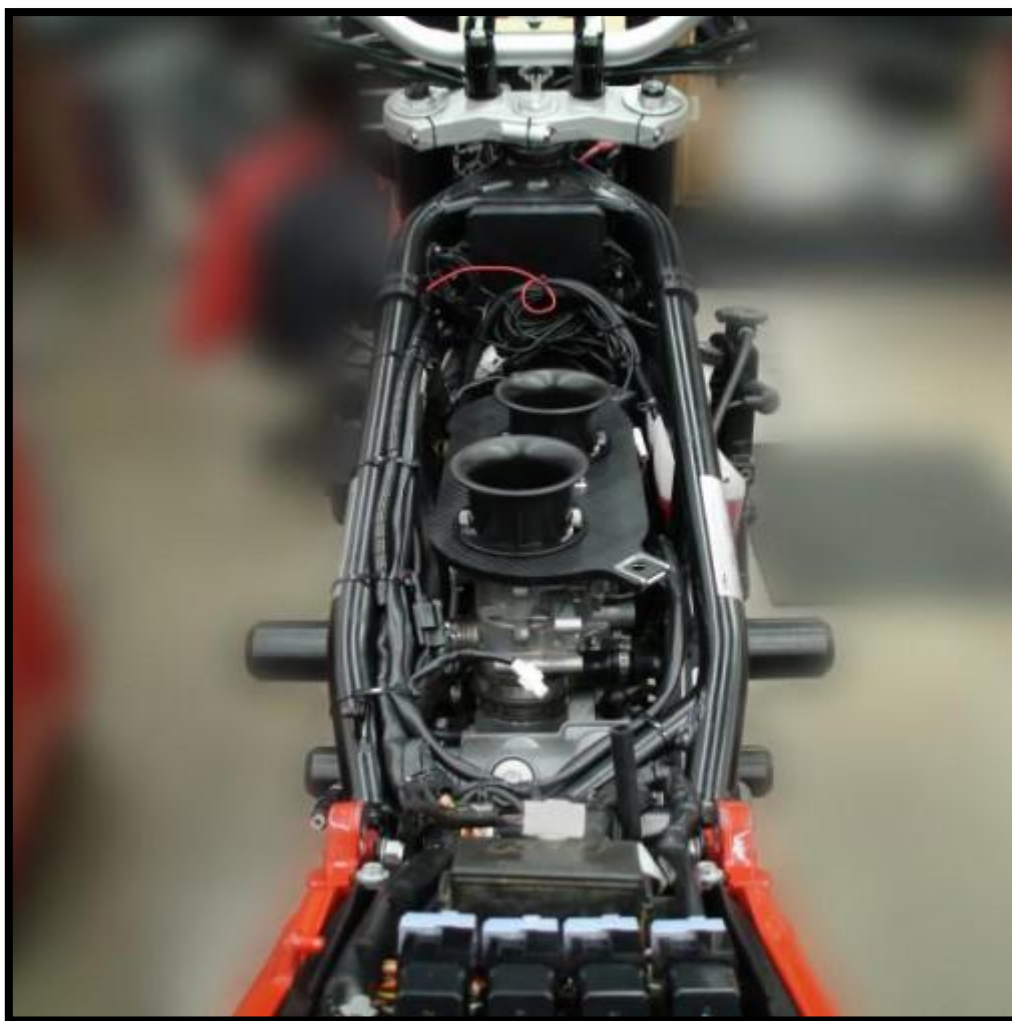
<http://www.dualsportwarehouse.com/CPR-ROTTWEILER-AIR-FILTER-KTM-LC8-990-CPR-ROTT-990.htm>

http://www.zenoverland.com/ktm_950-adventure/cpr_rottweiler_intake_ktm.html





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8.4 DNA MAIN STANDARD AIR BOX FILTER

A replacement for the OEM filter

<http://www.e-dnafilters.com/Product.asp?ID=695>





8.5 BMC FILTER

http://www.bmcairfilters.com/standard+bike+filters/fm493-20_d673_2.aspx#available



STANDARD BIKE FILTERS - FM493/20



8.6 MWR AIR FILTER

<http://www.pureperformancecycles.com/Brand/KTM/KTM-Super-Duke-990/Performance/MWR-Air-Filter--990-Superduke-Adventure-SMT>



http://www.ram-italia.net/index.php?main_page=document_product_info&cPath=8_57&products_id=224&language=en





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8.7 KS FILTERS



8.8 MWR SIDE PRE-FILTERS

If you are using the standard air box you can use these pre-filters in the side doors of the air box **PART.NR. : MC-050-06**

<http://www.racingairfilters.eu/?ids=kop3/sub7>





8.9 SOME HOMEMADE AIR BOXES

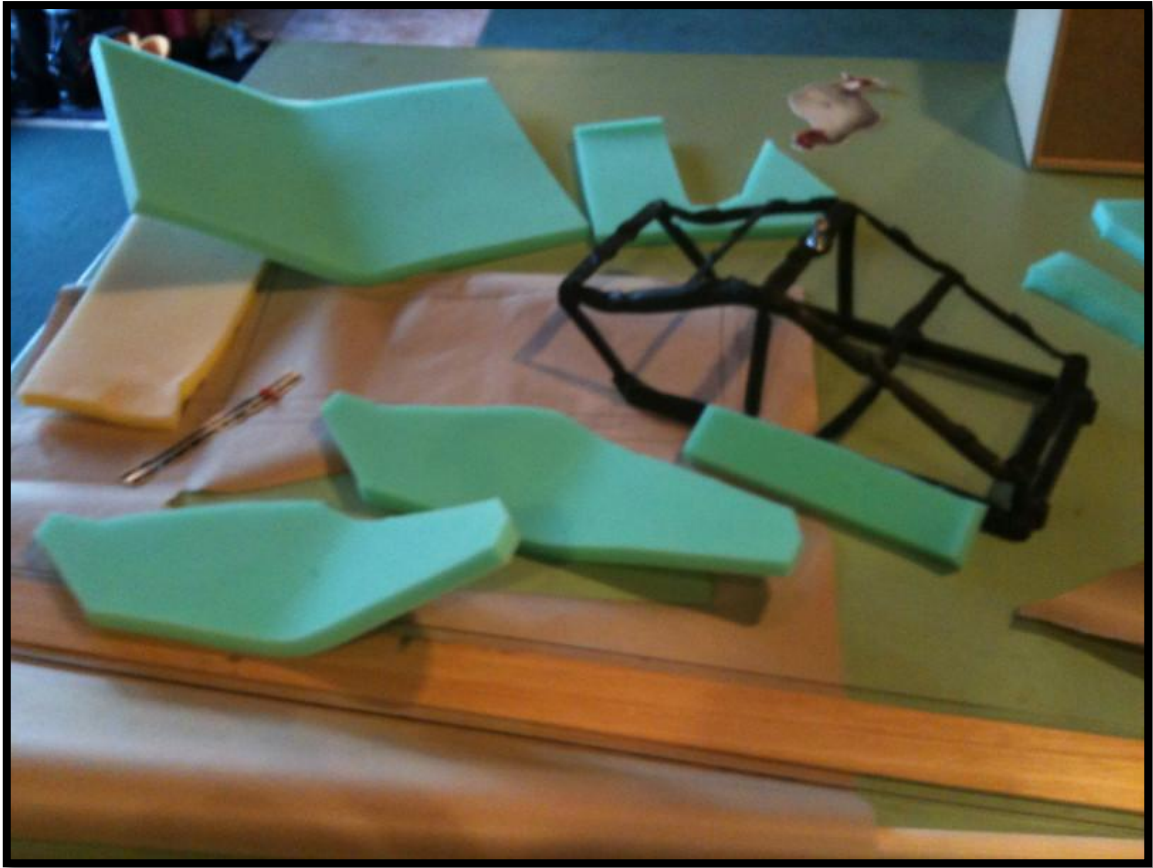
If you don't have the funds to splash out on air boxes or filters you could try these.

This one uses the original air box lid, the concept could be applied to the SMT & SMR





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8.10HOMEMADE TOP FILTER LID

My friend David did this mod, he used a K&N filter 33-2544 for the lid filter & a MWR main filter, he also ran the MWR side door pre filters. You cut the OEM air box lid to house the K&N filter snugly.

He then used silicone to seal the K&N filter to the lid to make a air tight seal.

<http://www.knfilters.com/search/product.aspx?prod=33-2544>

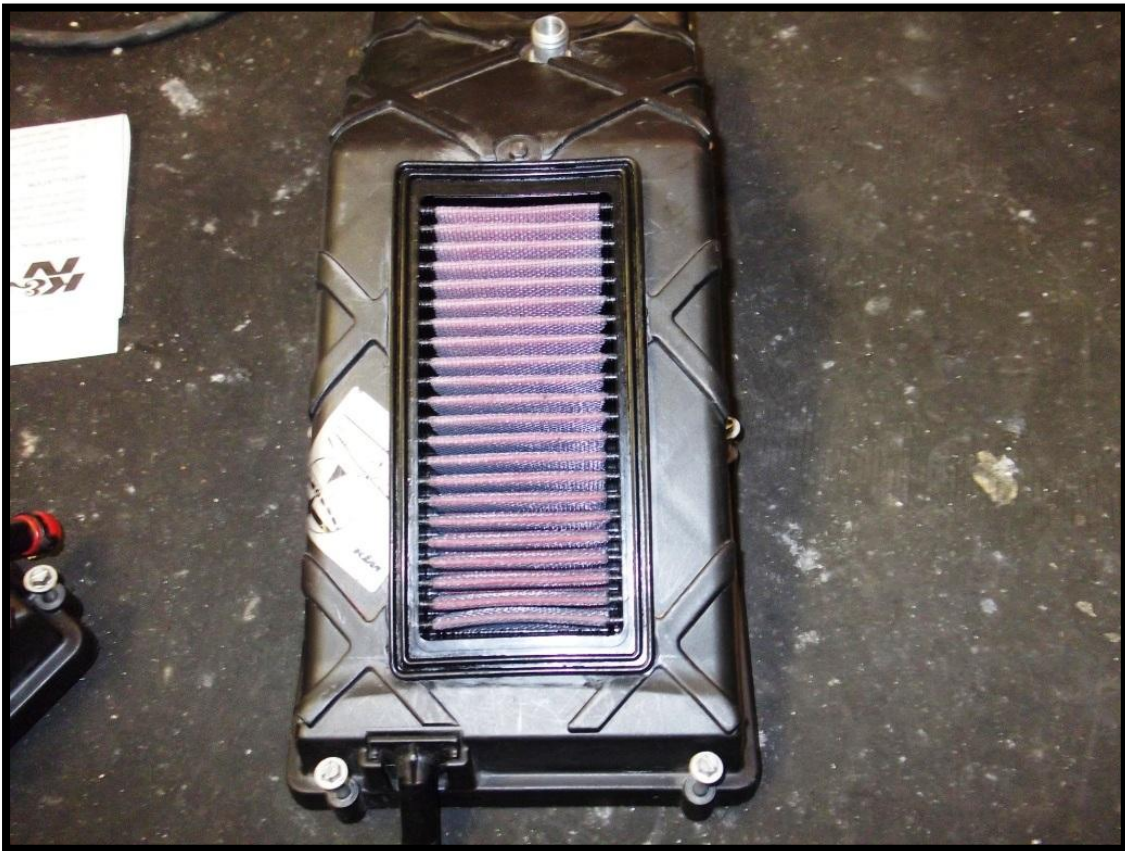
Part 33-2544 Product Specifications

Product Style: Panel Air Filter
Height: 0.875 in (22 mm)
Outside Length: 6.938 in (176 mm)
Outside Width: 3.5 in (89 mm)
Filter Material: Cotton Gauze
Filter Re-Oiling Amount: 0.33 oz (10 ml)
Inner Wire: No
Top Style: Open
Weight: 0.53 lb (0.24 kg)
Product Box Length: 7.72 in (196 mm)
Product Box Width: 1.75 in (44 mm)
Product Box Height: 9.69 in (246 mm)

K&N 33-2544



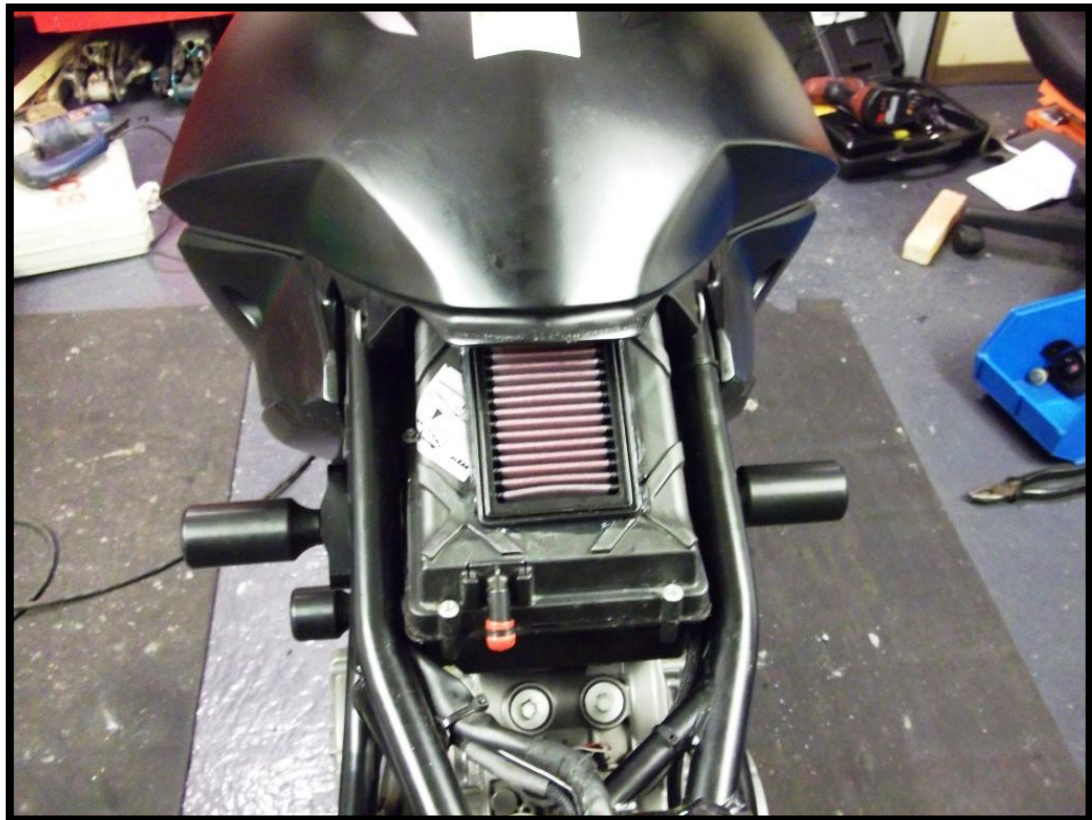




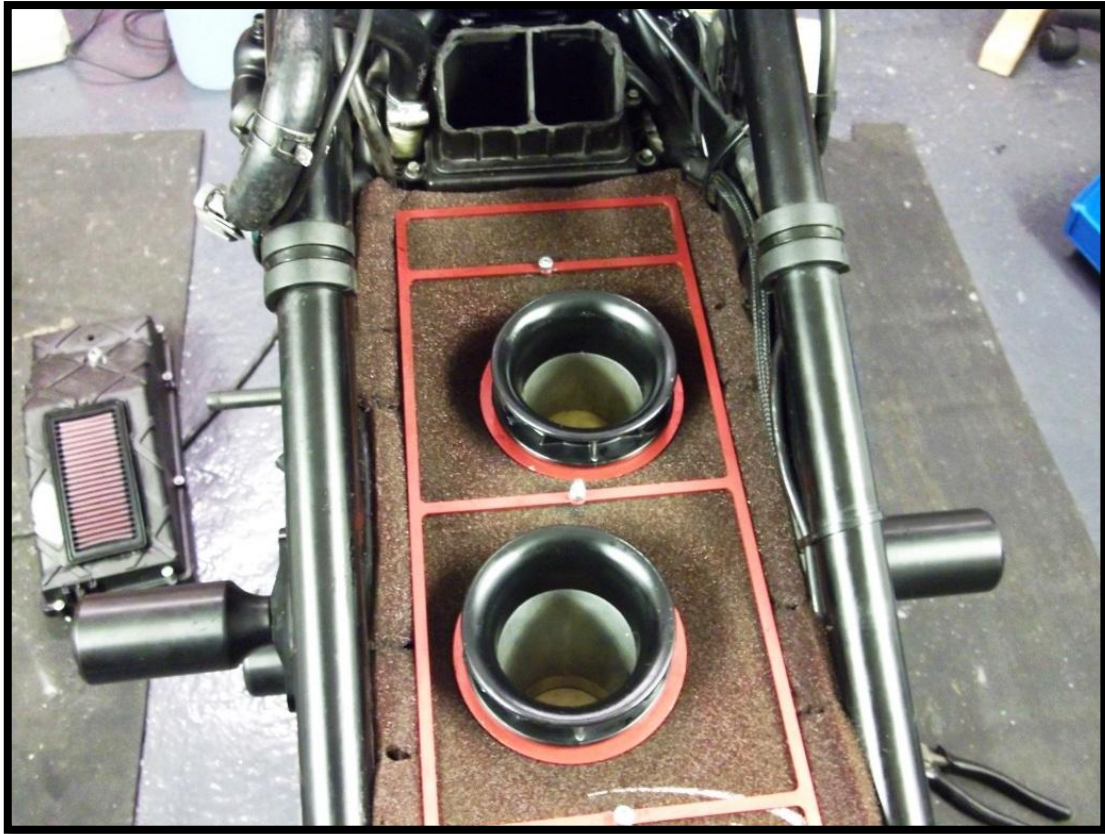
KTM



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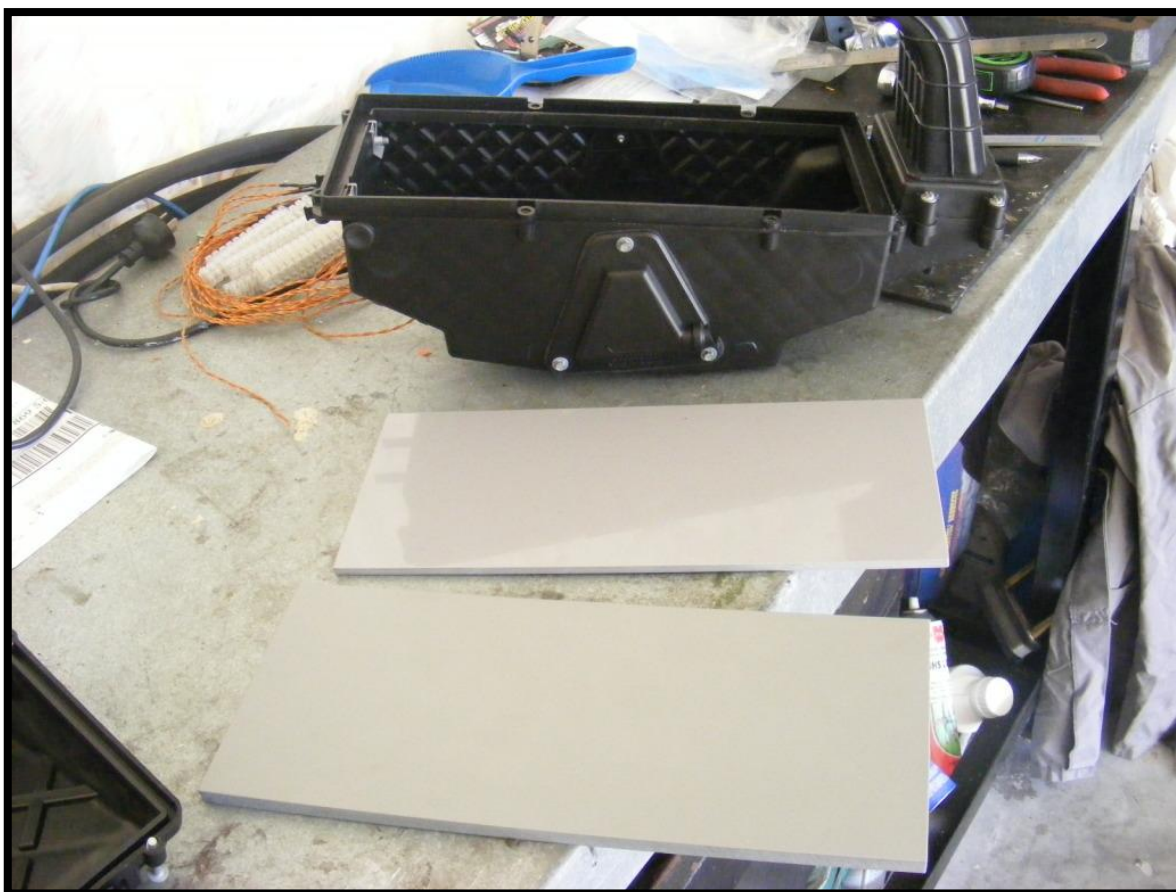


8.11 HIGHSCORE AIR BOX WITH DNA AIR BOX

I finished off High score's air box mod today, I will head to the Dyno soon with before & after runs to see the gains using my DNA stage 3 air box, I will take my DNA stage 2 lid to the Dyno as well to test it with the air box.

I am using my DNA stage 3 lid & air filter, I used 6mm thick ABS plastic sheet cut to the air box shape, I removed the snorkel & made up a plate to seal off the opening, I cut up a OEM filter & used the edge of the filter to seal the lid to the air box, I am using the original screws from the KTM air box with spacers to clamp down the lid to seal to the lower air box, I cut out the plastic lid out to give the best air flow from the low air box, I still need to tidy it up, I have sealed the whole air box using silicone.

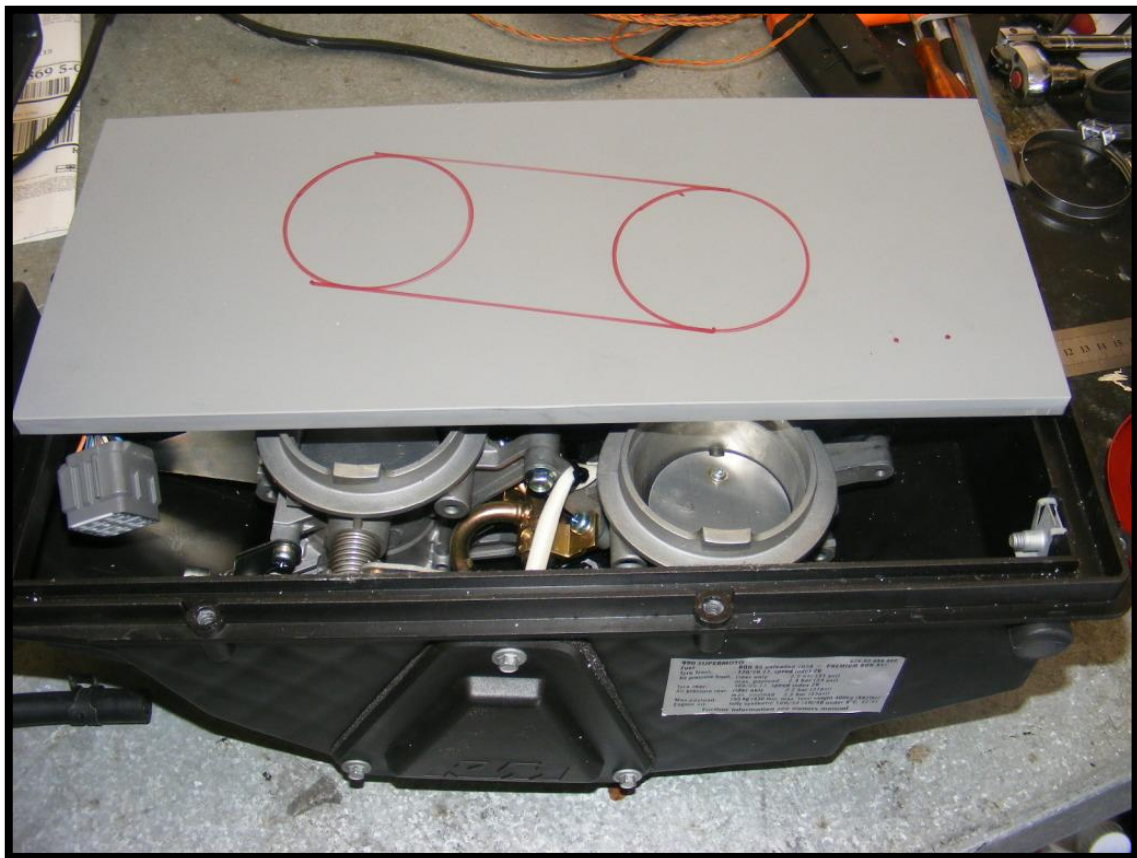




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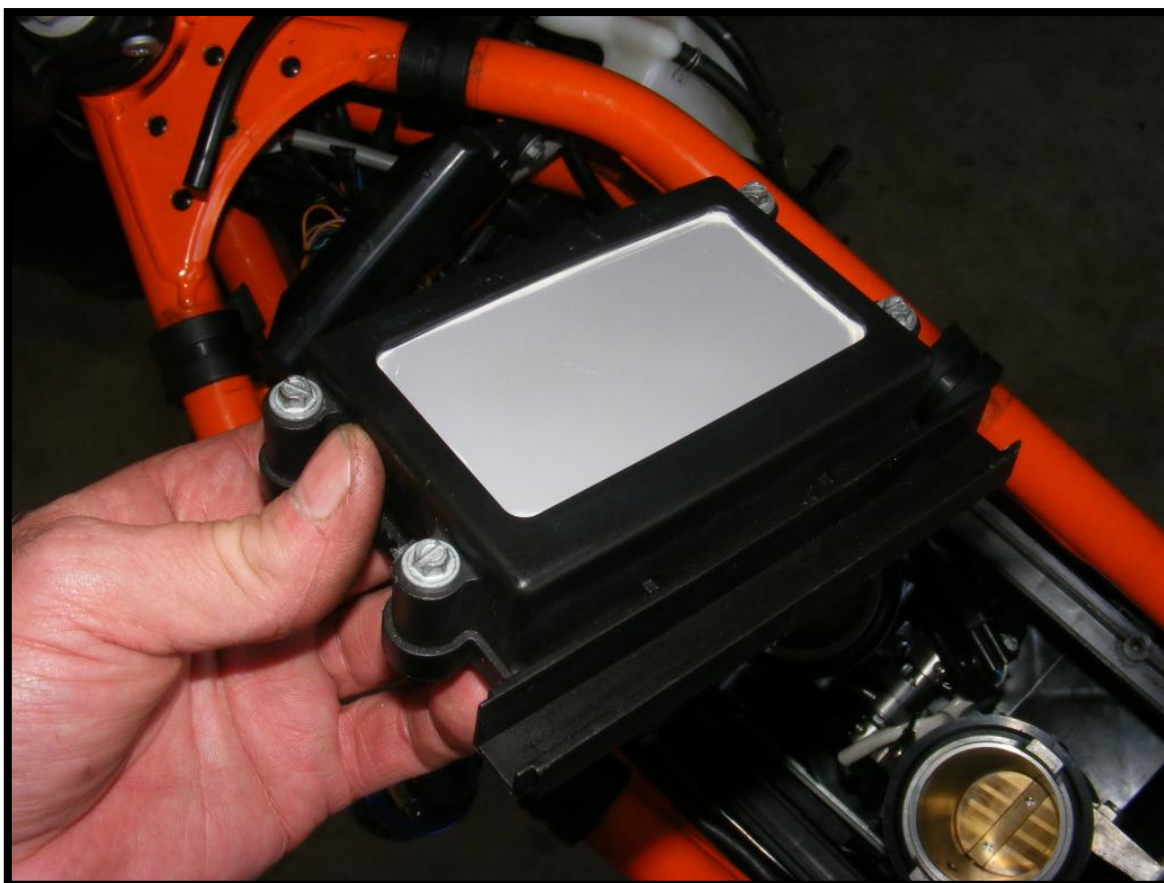


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8.12 SOME POD FILTERS





9 BIKE SERVICING

9.1 KTM 990 SMT OWNER'S MANUAL

<http://www.ktm950.info/library/assets/pdfs/unencrypted/KTM%202011%20990%20SM%20Owner's%20Manual%20unc.pdf>

SERVICE LABOUR TIMES KTM MODELS STREET 2012

model	model year	1000 km *	7500 km or at least once a year	15000 km * or every 2 years	22500 km or at least once a year	30000 km * or every 2 years
950 Adventure / S	2003-2005	290	180	320	180	320
950 Super Enduro R	all	260	150	290	150	290
950 / 990 Supermoto / R / T	2005-2010	260	150	280	150	280
990 Adventure / S	2006-2008	310	200	320	200	320
990 Adventure / R	from 2009	180 **	200	320	200	320
990 Super Duke	from 2005	270	150	310	150	310
990 Super Duke R	2007/2012	270	150	310	150	310
990 Super Duke R	2008-2011	150 **	150	310	150	310
990 Supermoto T / R	2009-2011	150 **	150	270	150	290

Valid until
model year
2012



9.2 REPLACING SPARK PLUGS

They need to be changed every 15000KMS

Most importantly you need a 16mm thin wall spark plug socket. The outer diameter of the socket needs to be smaller than 20.6mm otherwise it will not fit into the 990's cylinder head. The front spark plug can be changed by unbolting the radiator & moving it forward.

9.3 OIL & FILTER CHANGE

I am not sure if anyone is interested in the subject, it may help someone out.

Changing your oil & filter.

Tools needed.

8mm socket long or short

10mm socket long or short

13mm socket long or short

19 socket

2 x 19mm spanners

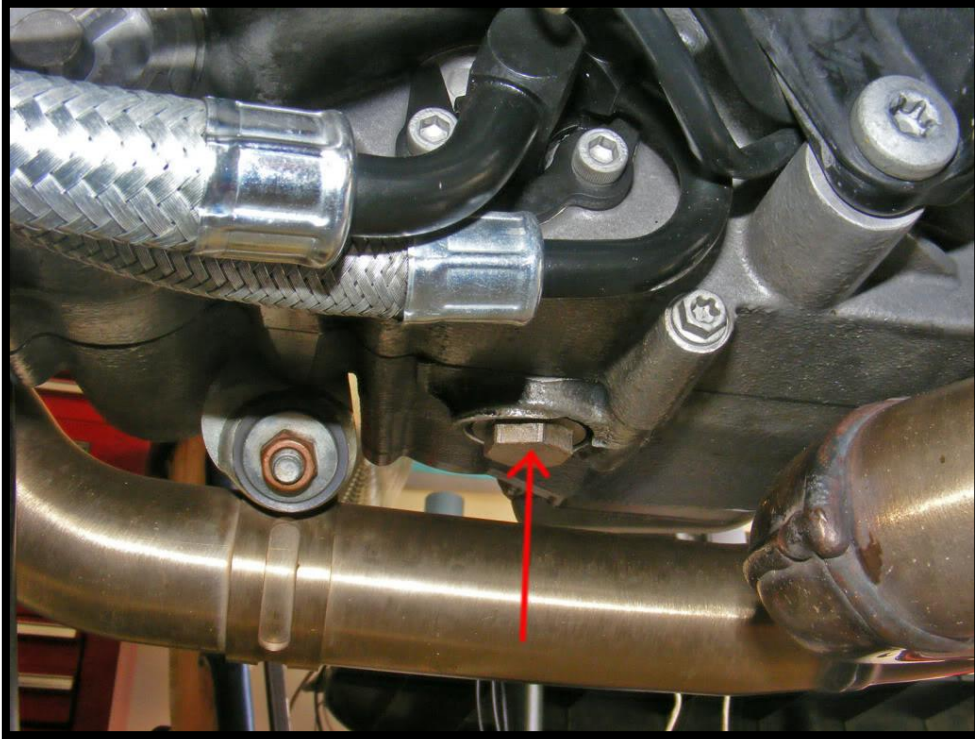
Long nose pliers

Outer circlip plies if you have them, otherwise you can use the long nose pliers instead.

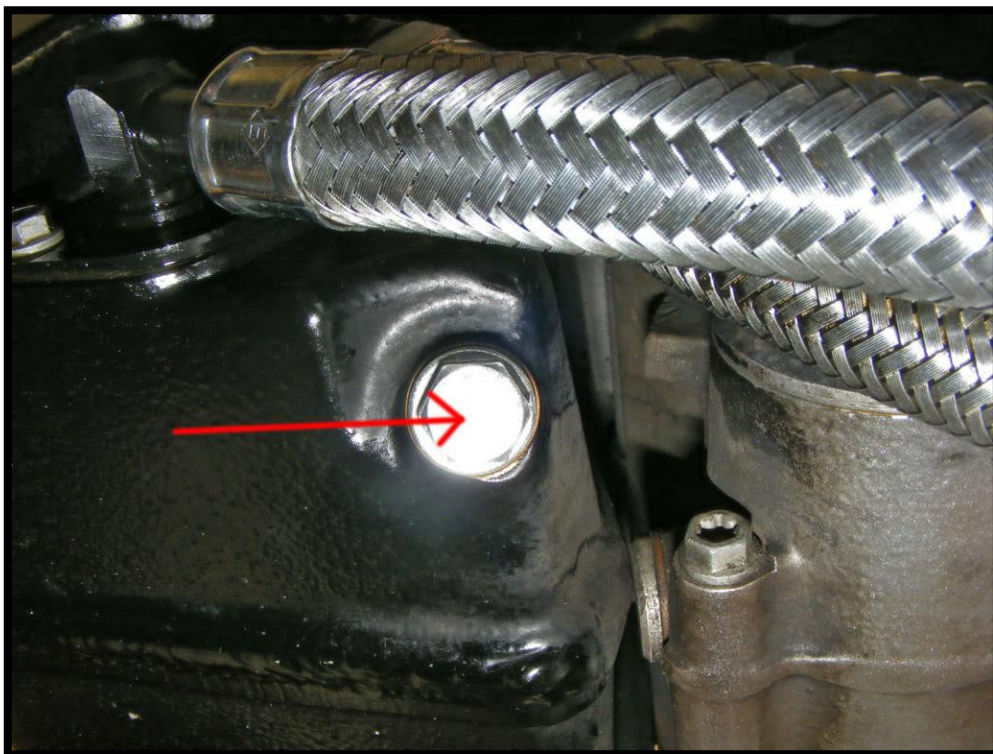
New oil filter + recommended grade of oil for your climate & riding conditions.



I warmed up my motor for 5 min from cold, then drained the oil from the main sump plug. Once the sump plug has been removed I clean off the magnet in the plug it's self using a stronger magnet or you can use a cloth if you don't have a stronger magnet.



Then drain the main oil tank.





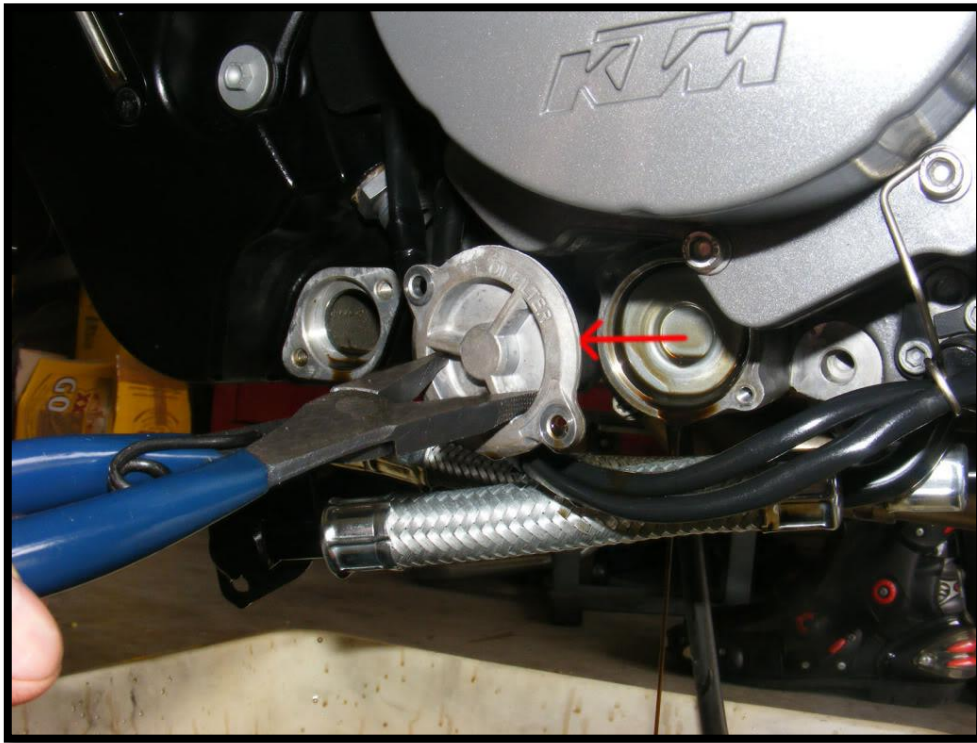
Then remove the oil tank strainer.



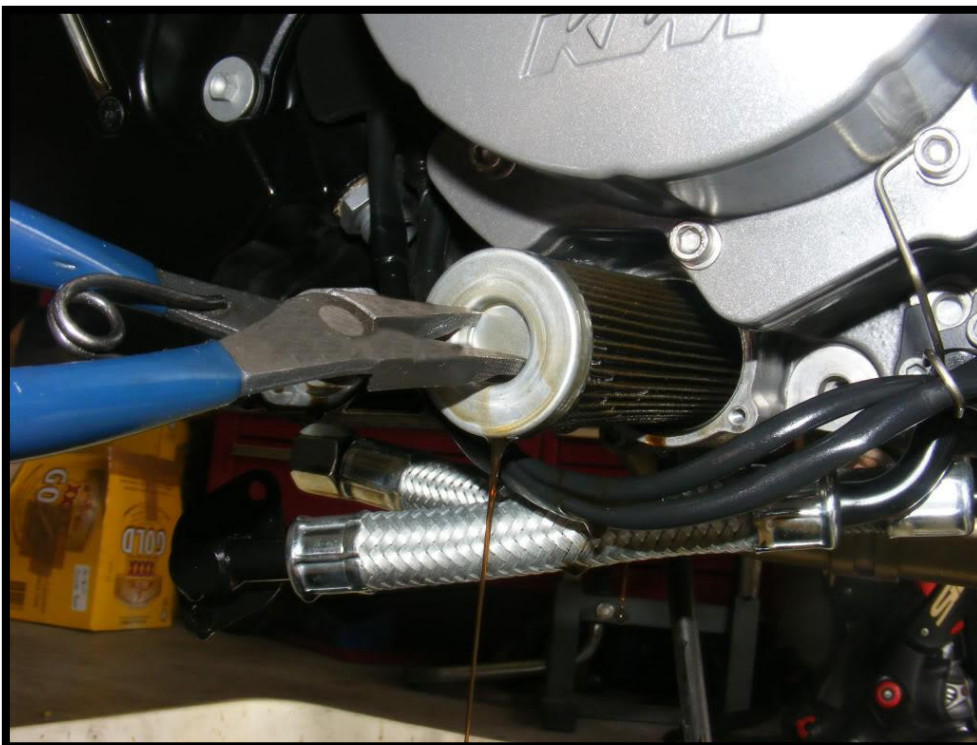
Unbolt the other oil line holding the oil tank side & turning the pipe off anti clockwise.



Remove the cover for the oil filter.



Remove the oil filter.



Being a mechanic for a long time I have learnt from other riders mistakes & don't like to use after market oil filters.



Fit the new oil filter, take note of which way it is fitted.



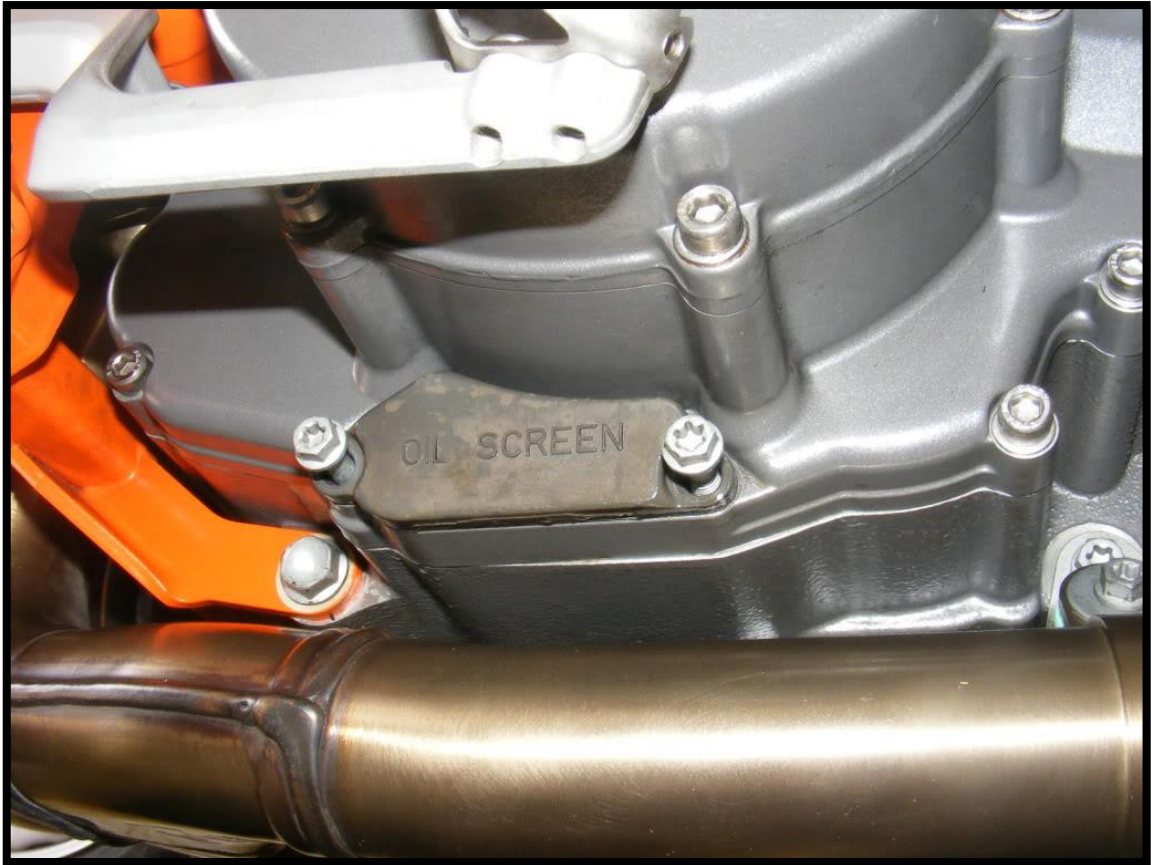
Clean off the oil tank strainer & clean off the oil tank magnet as well.



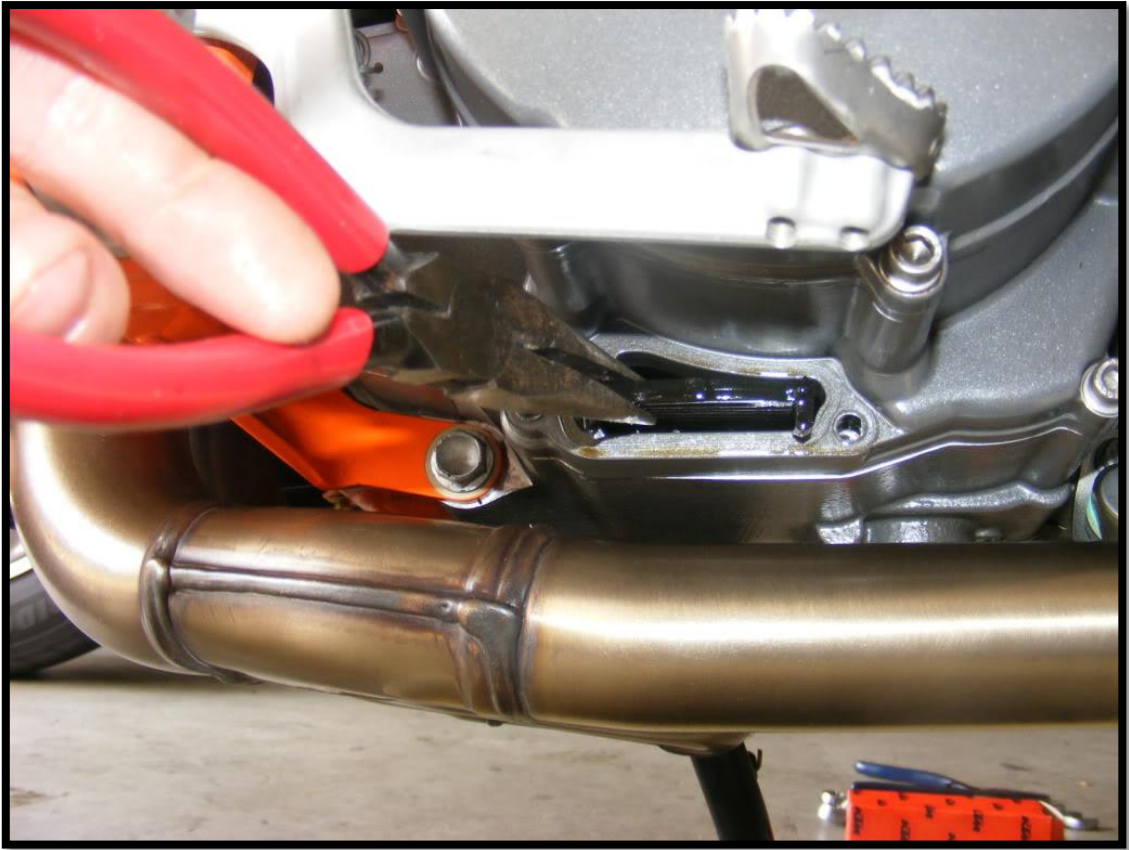


On the right side of the motor below the clutch cover remove the oil strainer & clean it.





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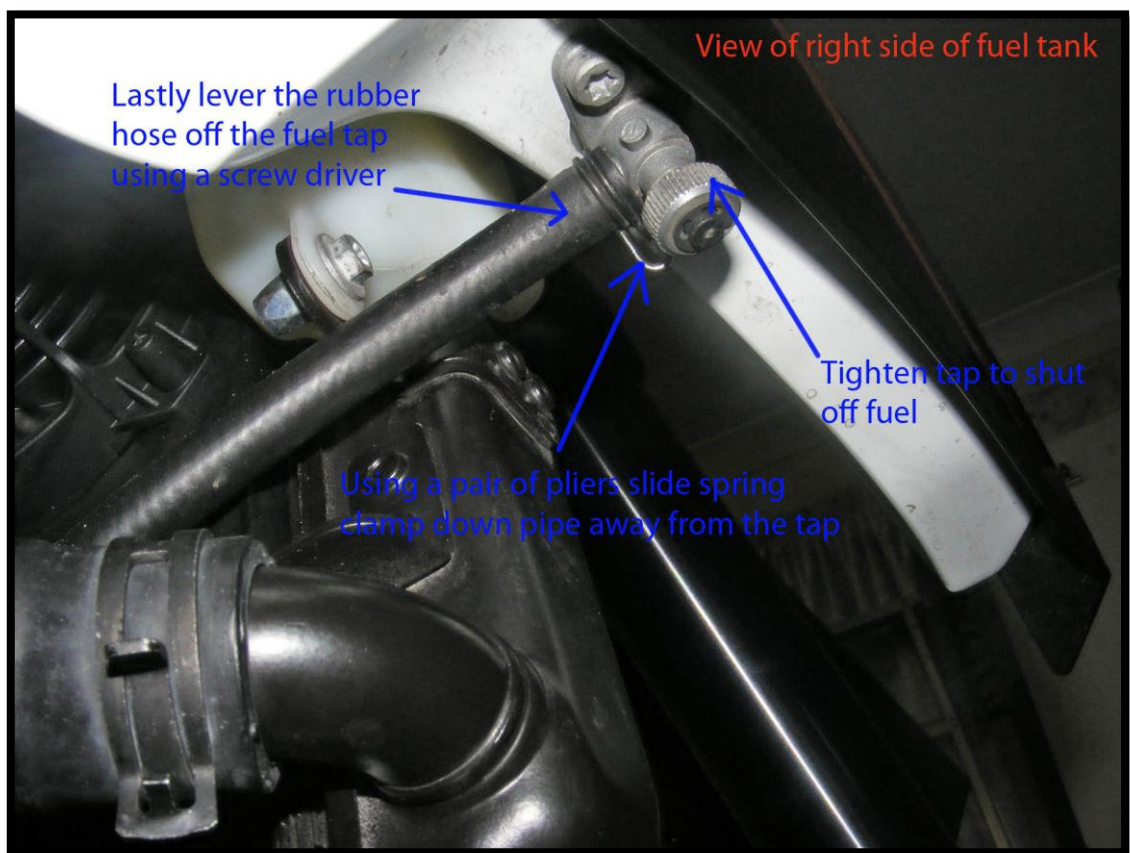
You are now ready to add the oil, measure out 3.8L. Full the oil tank to maximum then run the motor until the oil has gone down, stop the motor fill the rest of 3.8L of oil that will take it to the full mark. Go for a short ride & recheck your oil level, recheck that every bolt you have touched is tight & there are no oil leaks.



9.4 REMOVING A SMR FUEL TANK

A quick guide to removing the fuel tank, I will do a SMT removal guide when I get a chance to work on one.





View left side of tank.

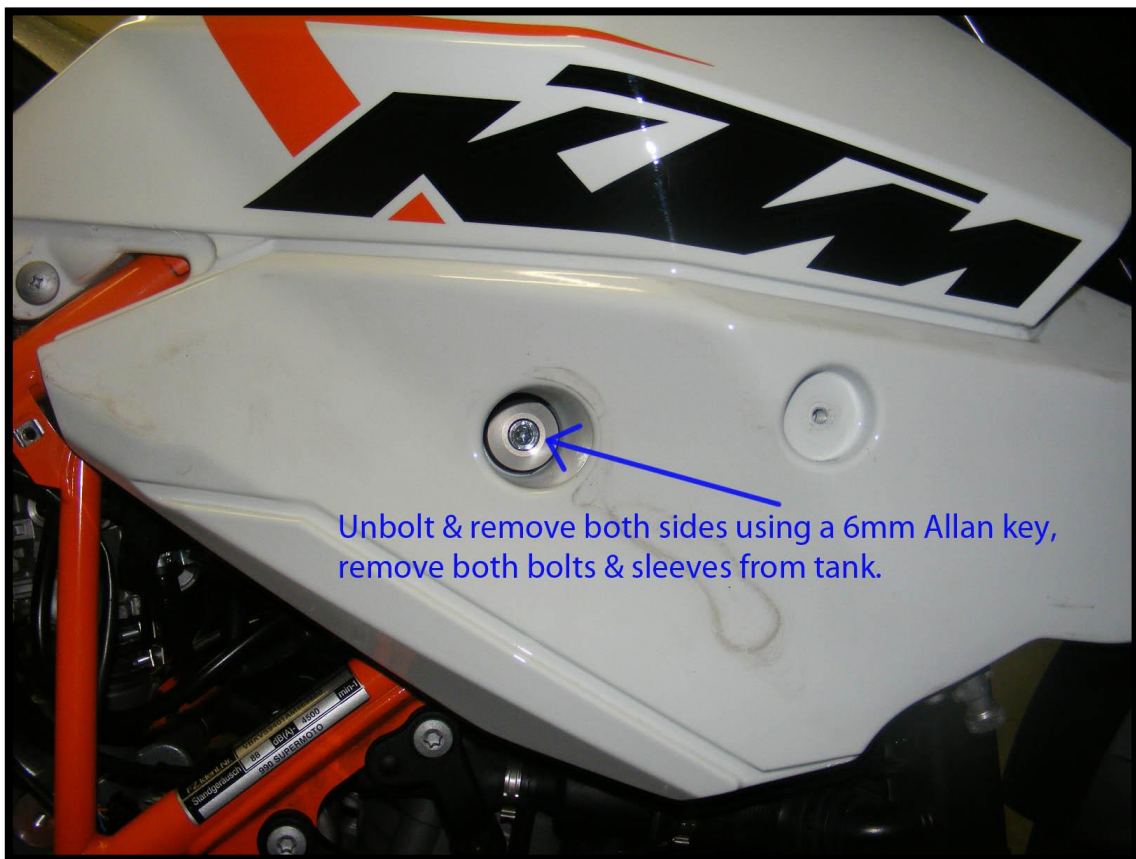
Push in release button to undip main fuel line. Be careful hose under pressure so wear a pair of glasses to protect your eyes. Now pull pipes apart.

Undo spring clamp & slide hose off fuel tap, a small amount of fuel will run out of pipe.

Close tap first before removing cross over pipe

View left side of tank





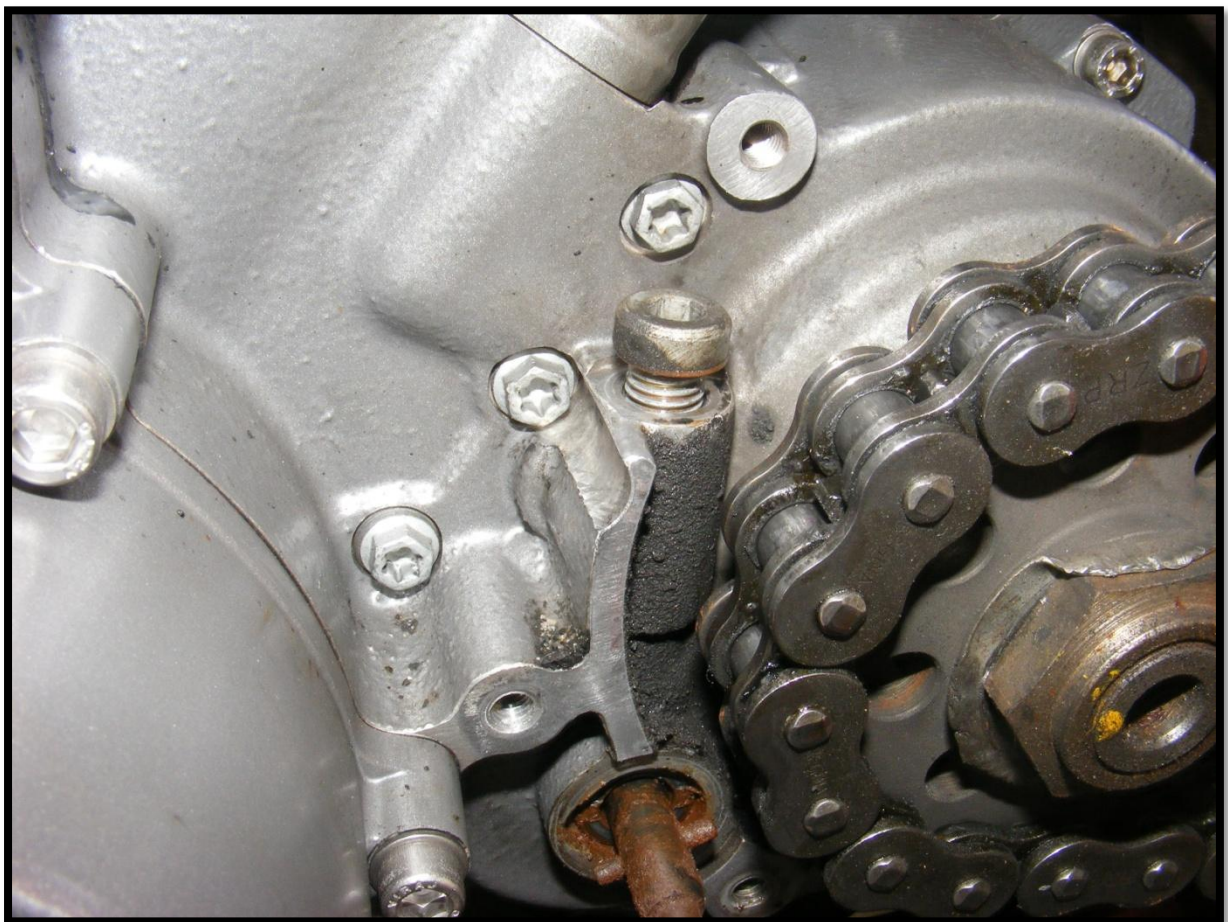


9.5 CLEANING THAT CLUTCH OIL JET

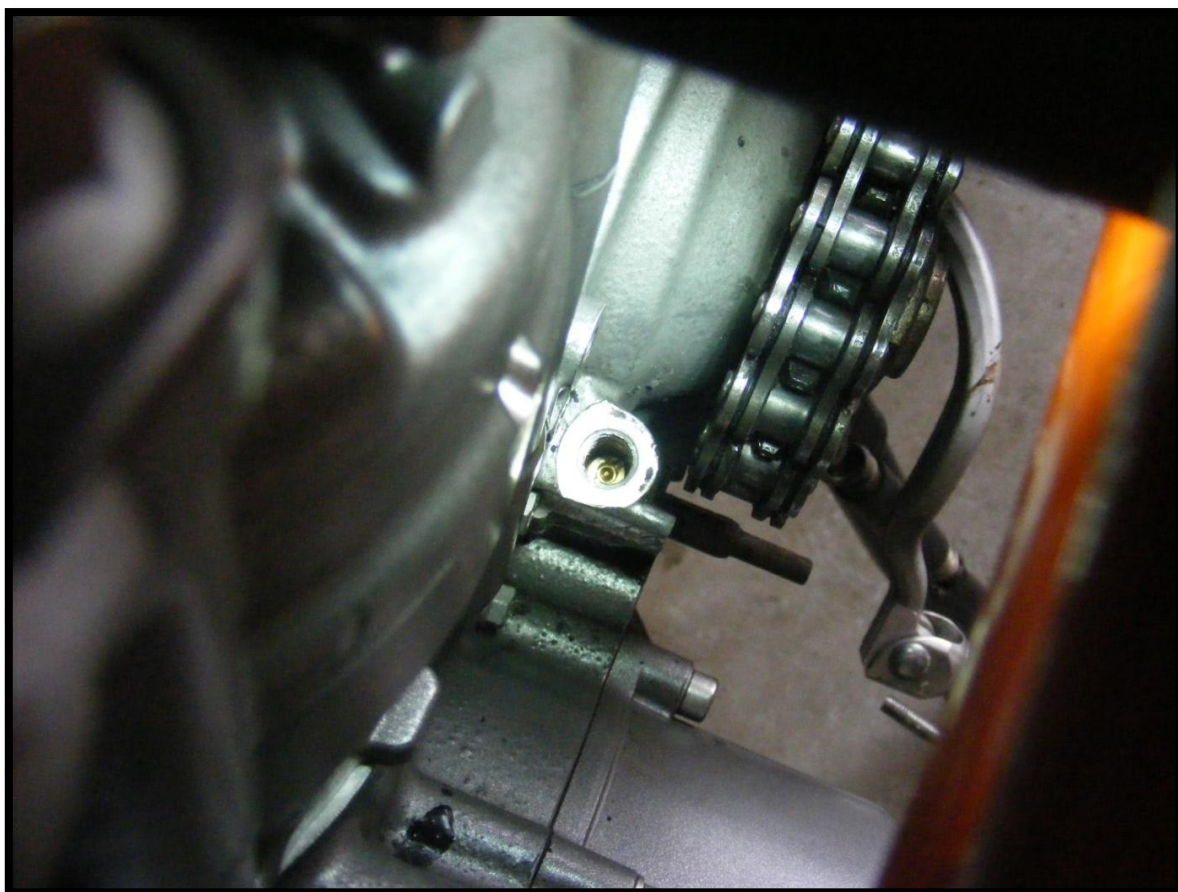
Remove the sprocket cover & the clutch slave cylinder, **WARNING never pulls the clutch lever when the slave cylinder is not bolted to the bike.** Unbolt the Allan key bolt which covers the clutch oil jet, the jet may be tight I had to use a spanner head screw driver to unbolt the jet anti clock wise.

To remove the jet up & out of the hole I used 2 match sticks in the screw driver slots, pushed the match sticks into the grooves either side of the jet then lifted it out.

I then cleaned the jet out using a strand of electrical wire.







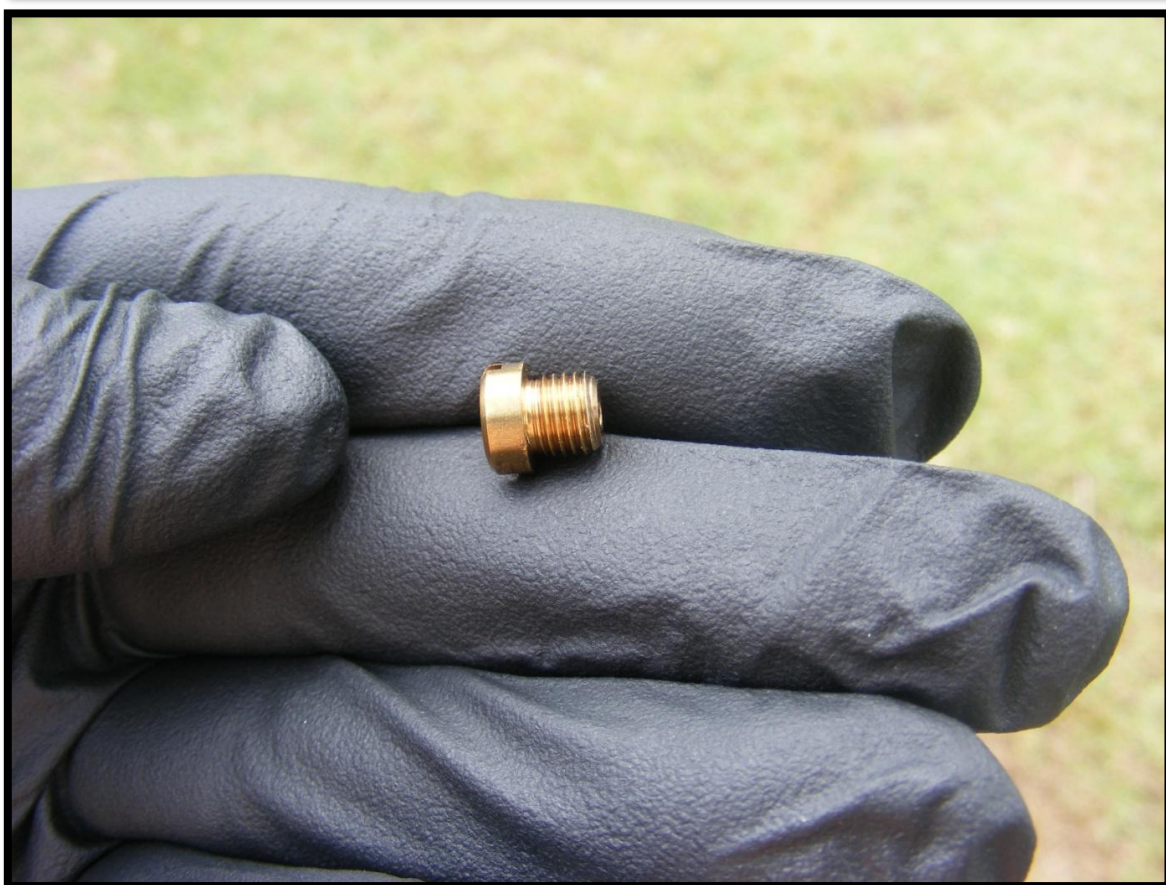
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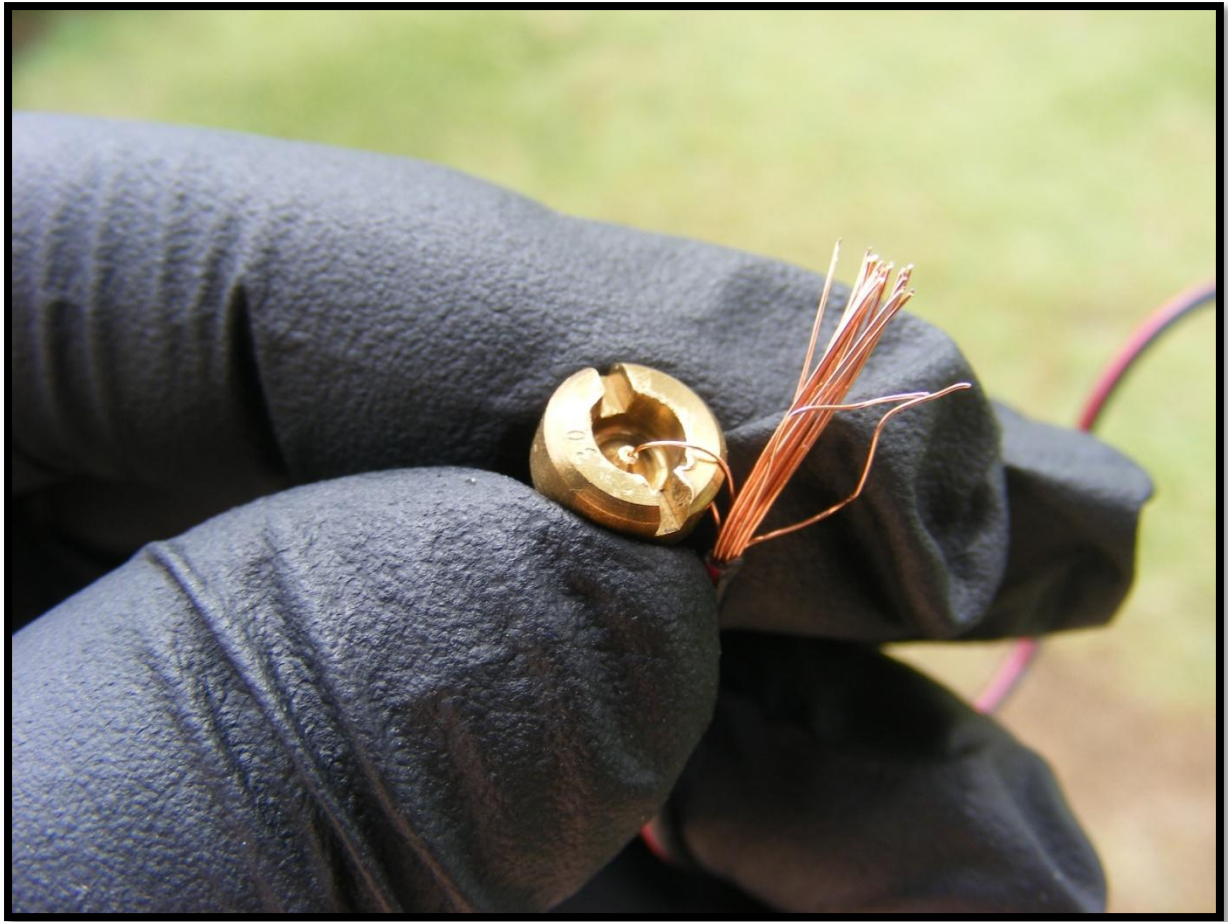
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9.6 **WATER PUMP CONDITION @ 22000KMS**

Reece popped over today & we renewed his water pump as he was worried about the reported water pump shaft wear, when worn can pass the coolant into the oil side of the motor.

On inspection of the old shaft we found the shaft had hardly any wear on it, it would have lasted quite a few more KMS before it needed replacing. We also found the water pump impeller design had changed; the seal has not been changed in design.

The water pump kit that Reece ordered was from these guys:

[http://www.dualsportwarehouse.com/CJ-DE ... WPS-CK.htm](http://www.dualsportwarehouse.com/CJ-DE...WPS-CK.htm)

We also removed Paddi's 2nd flies & load one of my custom maps into his SMT, then the neighbor got into the act he wanted his tappets checked on his DR, all in all it was a good day playing with the bikes.

We also fitted Reece's new tail tidy.



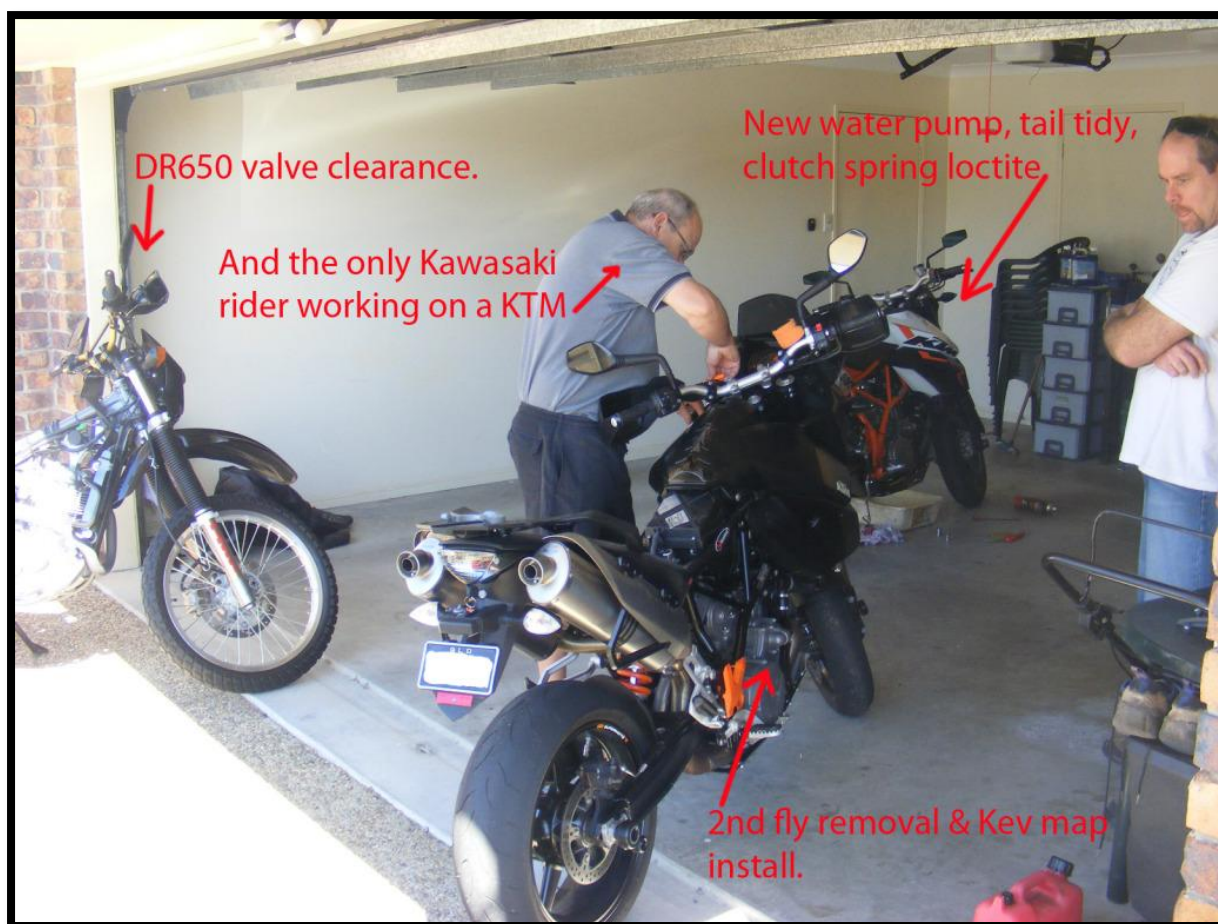


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9.7 KTM 990 WATER PUMP OVERHAUL

It's not my intention in this article to do a step_by step How To of the LC8 990 water pump overhaul.

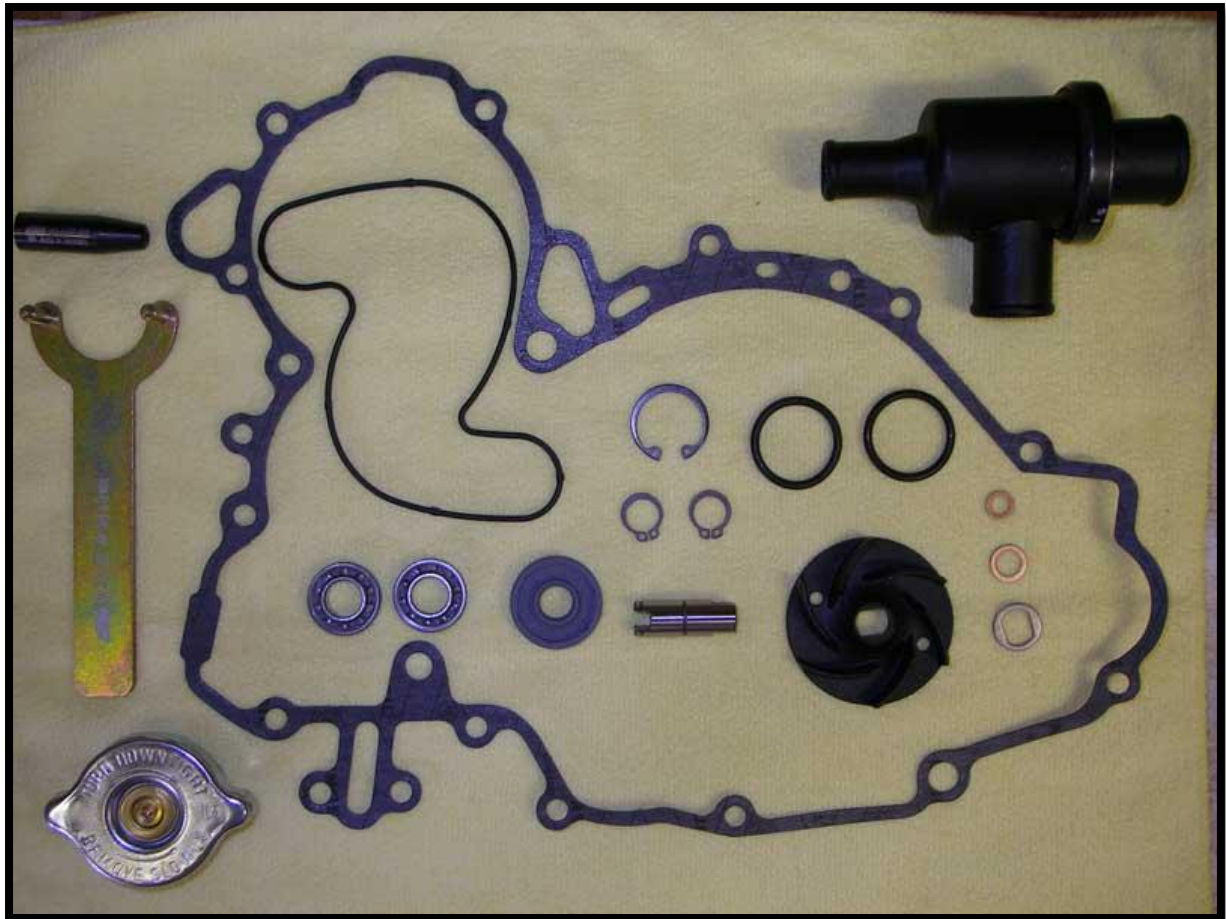
In the image below are the parts and a couple of special tools that is used for this service. All of the parts inside the gasket, including the gasket, comes in a kit from [KTM Twins](#) in San Francisco, CA, USA. for \$85 USD as of this writing.

In the upper right is a thermostat \$29 USD [Cheap Cycle Parts](#) which I replaced as preventative maintenance (PM). The radiator cap **58035016000** \$19 USD Cheap Cycle Parts in the lower left is something I replace every time I change the coolant as a PM. Faulty and/or dirty radiator caps have caused overheating problems in the past on a number of LC8 engines, and may have also caused the replacement of functioning water pump seals and/or head gaskets due to misdiagnoses.

The two tools on the left are the holder for the impeller **60029082000** \$27 USD from Cheap Cycle arts and right above it, the seal mounting tool **58529005000** \$22 USD from Cheap Cycle Parts



The parts are routinely being upgraded by KTM, so be sure you use the latest parts for the best results. Also, Craig Johnson of [CJDesigns](#) has developed an impeller shaft with a very hard coating that looks to last much, much longer than current OEM designs. I will be upgrading to one of Craig's shafts on my next rebuild.



I use Engine Ice coolant. Maybe that has something to do with seal longevity (or not), but it definitely allows my bike to run cooler (ie: the fan comes on less easily/often). You'll need two 1.9 litre bottles at ~\$20 USD the first time you use it, as the 950/990's hold 2.1 litres.

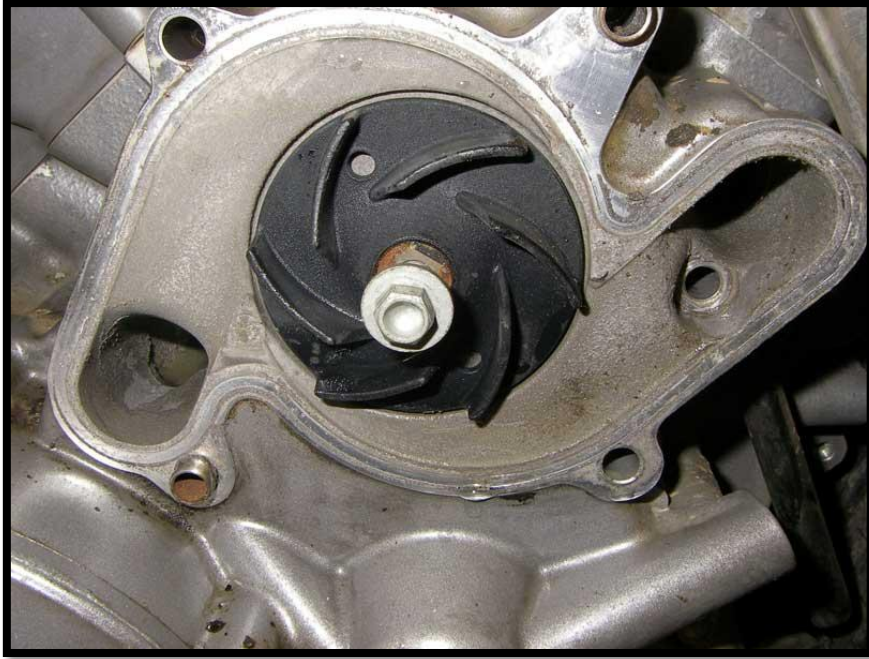


A couple of these magnetic parts trays come in very handy when doing projects such as this. I have one for the chassis fittings and another for the engine.

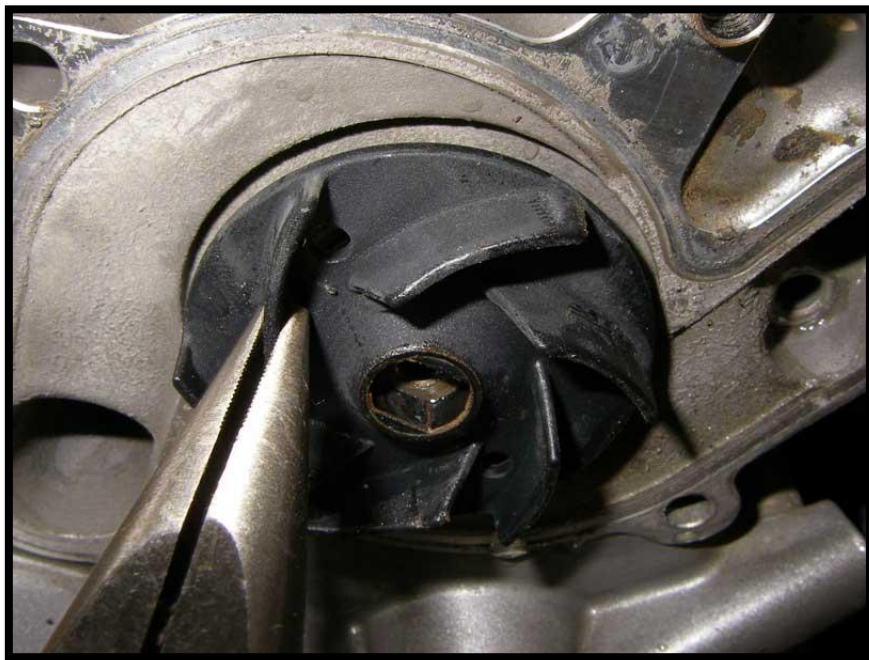


Once the pump cover is removed, the plastic impeller can be inspected for damage. Look for any contact between vanes and the inside of the pump cover. A few early bikes had problems with dislodged or missing circlips that allowed the impeller to move in and out of the bearings. The result was plastic bits showing up in the coolant recovery tank, and eventually, overheating. This engine does not show signs of contact. The circlips were all present and functional.





The impeller is a very tight fit on the shaft and some care must be taken to remove it. I had a new impeller in my kit, so I just pulled it off with pliers. I advise having a new impeller on hand when you do this overhaul.



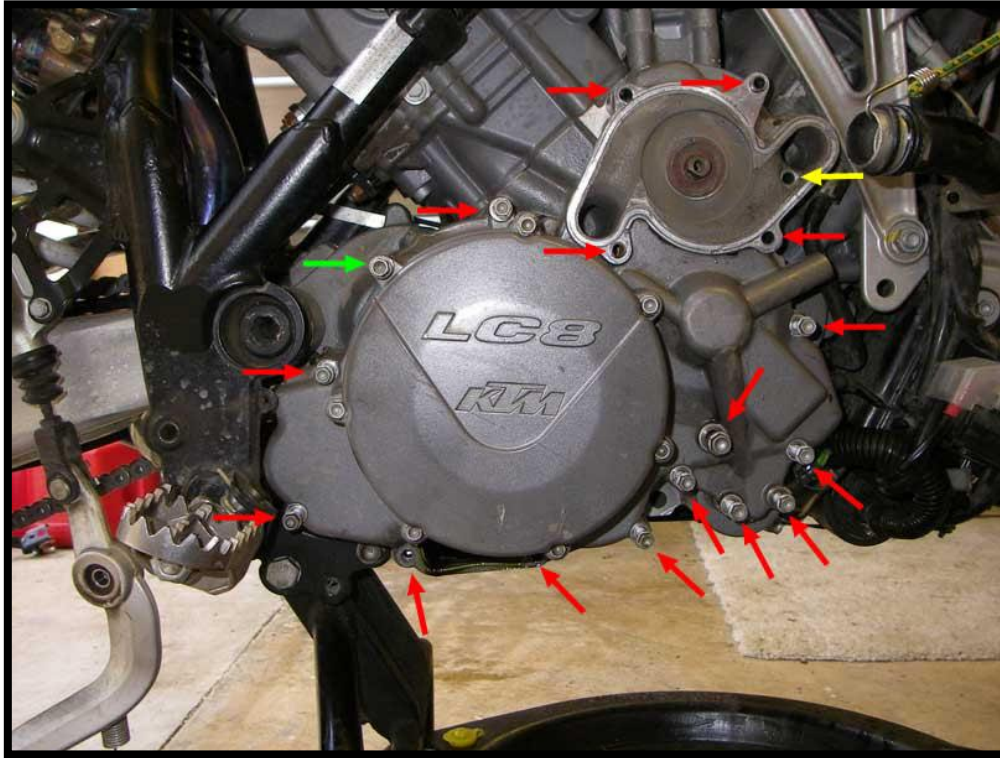
Once the impeller is removed, you can really see the extent of the leftover casting sand that permeates the 950's cooling passages. One theory as to why the water pump seals on some of these engines fail so quickly is that this leftover casting sand gets between the seal and the shaft and wears it out (more on this later). I flushed this engine's cooling system early in its life, and as you can see, there is still some sand present.



If you're just flushing the cooling system and don't need to R&R the pump shaft and bearings, you can skip the next few steps and go directly to [flushing](#). Also, if you're just replacing the seal (as dictated in the Maintenance Schedule for the 950 Adventure every 15000 km) you can do so at this point without further disassembly.



You can see the bolts (18) that must be removed to pull off the inner clutch cover.
Note: Only one of the outer cover bolts need be removed (green arrow). Also, don't overlook the one inside the pump itself (yellow arrow).



A little friendly persuasion may be necessary to get the cover to release. Be gentle.



This is an image of one of the areas in the inner cover water passages that collects casting sand. There is a small amount visible here. I have seen much worse. Clean all of these areas and the rest of the pump chamber thoroughly. It should be "squeaky" clean, if you expect long life out of your new seal and shaft.



Here's how the seal installation tool works. Lube the seal and tool with lots of your favourite seal lube. No matter what method of protection you use, it's VERY important that the seal is not damaged by the very sharp edges of the new shaft. I've seen several seal failures as a result of folks not getting this step right. I also spray some silicone mould release agent (available at most good hardware stores) on the edges of the seal and the cover where they mate. This allows the seal to be removed easily next time (Especially helpful if you're doing a seal only replacement).



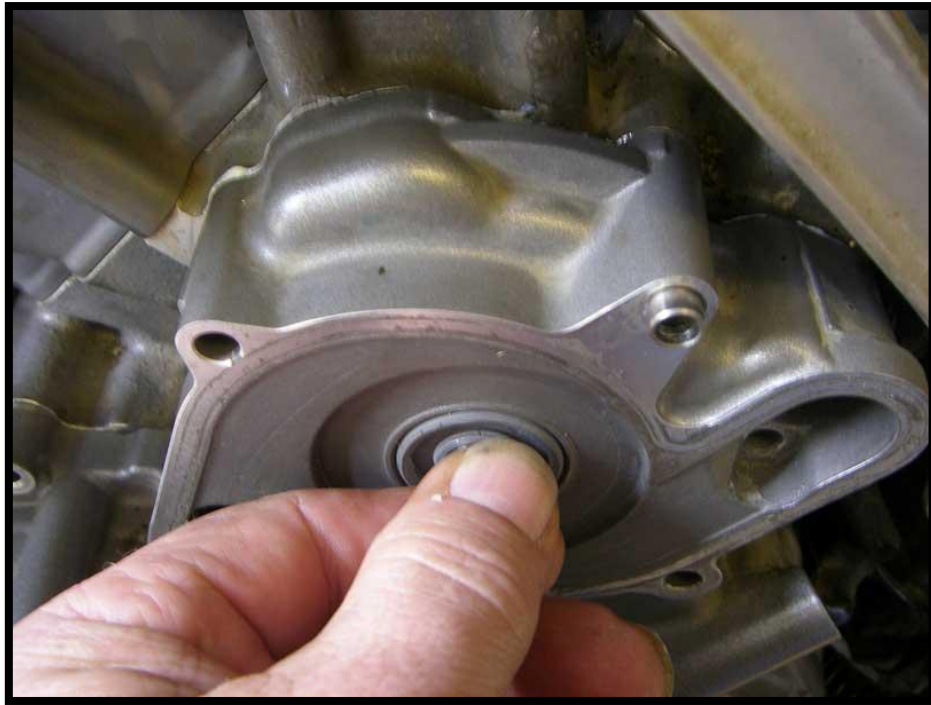


The seal is then pressed into its recess with a seal installation tool and hydraulic press (or a proper size socket and hammer, if need be). Just take great care that it goes in evenly or you'll make a mess of it and the seal will leak straight off. Slow and careful here. This is where most jobs are botched.



Be very careful that the new gasket doesn't become misaligned when you install the cover. Also, make sure that the cover is fully seated and flush with the engine case all around before tightening any of the bolts. At least one owner has broken the cover by not following this rule. For the clutch cover to seat fully, you will need to turn the pump shaft by hand to engage the balancer shaft in the engine.





This is the "proper" tool for the impeller installation. Other methods may work OK, but why skimp on such an important piece on your \$15,000 bike. The bolt gets Blue Locktite and 10 NM of torque. The tool keeps that torque from being applied to the slot in the shaft. Remember, it is so hard that it verges on the edge of brittle. You DO NOT want to break the shaft after all of this work (or worse, have a cracked shaft break on the trail miles from nowhere), now do you?



Before installing the pump cover, insert the cover bolts to block off any passages that go into the crankcase, and do a proper flushing of the coolant passages in the



engine (as shown in the image below). The casting sand is located in the cylinders and heads and needs to be attacked directly with water pressure, as close to the source as possible. This is why I prefer the direct method of a hose directly into the water passages, rather than trying to get the water pump to remove it all through the radiator. As you can see from the above photos, much of the sand tends to collect in nooks and crannies of the inner cover and surfaces behind the impeller, so these items must be removed and thoroughly scrubbed for all sand to be effectively removed.

I have used gun cleaning brushes (the nylon bristle kind on thin flexible shafts) to get deep into the engine passages. Also remove the overflow container and clean it thoroughly. A mixture of crushed ice and baking soda works well for this chore. Remember "squeaky" clean.



Clean the cap if not replacing it, paying particular attention to the area under the disk at the centre of cap (inside). This is the one-way valve that allows hot coolant that was pushed out of the cooling system, past the pressure relief valve, and into the reservoir during operation, to return to the engine and radiator when cool. If this valve doesn't seal, coolant will be forced out into the reservoir at the wrong time causing it to overflow onto your right foot and the ground. This has been misdiagnosed as a blown head gasket by some. I prefer to install a new cap each time I change coolant.

Now, button everything back up, install Engine Ice (or your favourite high quality silicate free brand) and "burp" the cooling system.

As for "burping" here's a great tip by BobbyC that I tried and it works great. Saves a lot of fiddling (especially when you're by yourself).



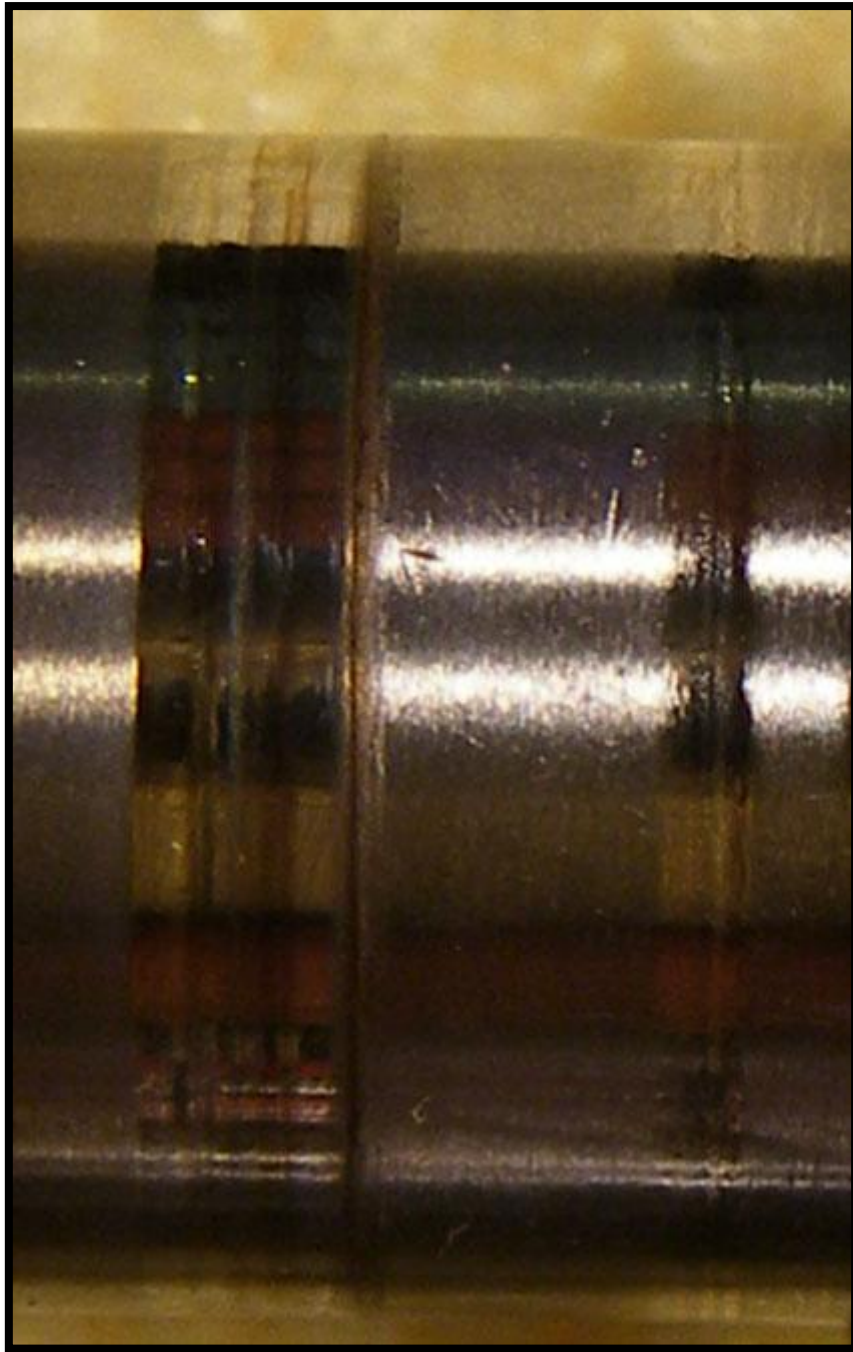
"I bled the system from the upper bleed screw at the water pump. Then I squeezed the 1" diameter hose on the left side going into the radiator until most of the air was pushed out. You might have to squeeze this hose 10+ times. Fill some more and close the radiator cap. Fill the reservoir to the max line and start the bike. Run it until the fan comes on and bleed from the bleed screw on top of the radiator. There should be very little air from this. I thought there was still some air in the system so I went for a slow ride around town. When I got back, there was a 1/4 of the coolant in the reservoir tank that was sucked back into the system. I topped it off and kept an eye on it for the next few rides."

Here is an image of the old shaft. You can see the two grooves worn into the surface by the double lip seal. The left is the impeller end and has the pressure and heat of the coolant. The right side is the engine crankcase end and two bearings and their seals protecting it from the hot engine oil. There shouldn't be any pressure on this side if your crankcase ventilator is functioning properly (and you don't have combustion blow by from [improperly seated rings](#)).



Here's a close-up of the groove area from the photo above. The groove on the left is considerably deeper than the right. You can also see a wide band of wear just to the left of the left side groove. I suspect that is caused by leftover casting sand in the coolant passages that migrated to the seal area. This engine exhibited NO signs of coolant leaking into the oil at the time of this pump overhaul at 19,733 miles. I suspect it wouldn't have gone many more miles before the seal gave out.

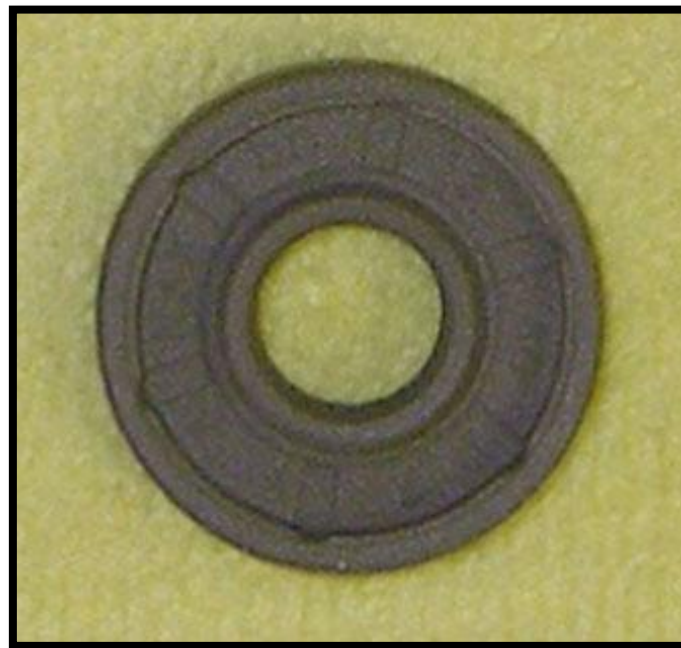




The newest shaft has a harder surface than the one that came in my 2003 bike. The seal is also a different material (Teflon) that should handle the heat better and be easier on the shaft than the old parts. This seal and shaft were first installed at the factory in production LC-8's built after July 2007, so it will be awhile before we get much of a data base to draw any conclusions about longevity. The pundit's suggest that 32k km (20k) miles should be the mileage at which the pump is overhauled. I suspect they are erring on the side of caution (I would suggest 80k km (50k) after a proper system flush), but their recommendation allows for other variables, such as more casting sand in the system.



An interesting note is that the Service Manual (since REV 1-2006) has dictated the replacement of the water pump seal every 15000 km (9300 mi) as part of the Preventative Maintenance Schedule. This is not in any other LC8 PM Schedule, making it look more and more like the seal problem was isolated to the 950 Adventure production line. Since the entire LC8 line used the same seal and shaft until July 2007, it begs the question: Was something wrong with the 950 Adventure QC in particular?



There are KTM LC8's with close to, and many more miles than, mine without water pump failures. There are also many bikes with much less miles than mine with seal failures. I suspect that there is more than the design or even the materials of the parts in the pump at play here. Some have been improperly installed parts. I have seen a few of those. Also, many folks have changed the seal and shaft when they were still good out of fear, caution, or the result of other problems that caused overheating. But, it's looking more and more like leftover casting sand from the manufacturing process could be the common denominator here. KTM even directs



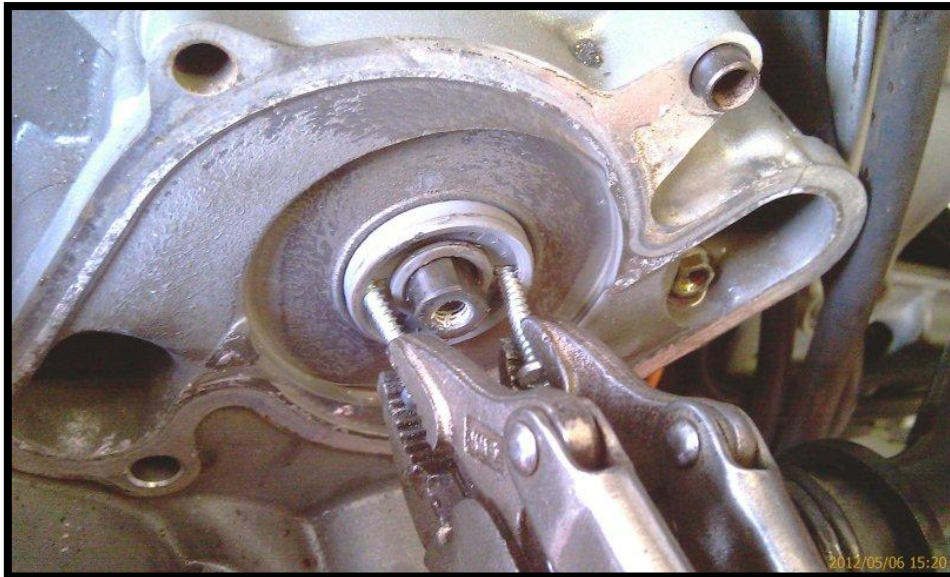
its service personnel in [Tech Bulletin 0544](#) (April 15, 2005) to flush the cooling system of 950 Adventures at the first service to remove "**Sand deposits from the casting process.**" I flushed my bike's cooling system early in its life, which may have resulted in its seal lasting so long. Also, there may be more, or less sand leftover in different engines resulting in earlier failures in some and longevity in others.

Until someone finds something else that can explain such a wide range of seal service lives, I will continue to recommend a thorough flush of all 950 Adventures early on and installation of the latest seal and shaft as needed. It may not be a bad idea to do this with all LC8's (couldn't hurt).

If you are stuck out in the middle of nowhere you can replace the water pump seal in place.

Drill 2 small holes through the seal then screw 2 self tapping screws through the seal, then pull it out, use some very fine water paper to clean the shaft up where the seal runs. That should get you out of trouble.





9.8 REPLACING EXHAUST SEALS & GASKETS

Yesterday I replaced the 2X exhaust flange seals + the rear header graphite seal which was leaking.

As you can see the graphite seal is half missing & burnt away, this is common problem on these 990's. The only trick with the graphite seal is make sure both surfaces are clean, sand the areas down so the seal is not damaged when installed, assemble the headers together before installing the pipe I had to use a rubber hammer to align the seal into the correct position, then disassemble & install the exhaust system back into the bike. I also used some copper paste on the exhaust bolts so they don't seize up over time.



I gave the whole exhaust a good polish with a metal polish called Autosol, the pipe looks like new now.





KTM





KTM



KTM



Exhaust is nice & clean again, a short ride & the gold has come back.





KTM





KTM



KTM



KTM

9.9 FUEL FILTERS

We have seen a few of them block up.

Other riders experience, occasionally, after the bike has been `rested` over a weekend, on the first ride afterwards it suffers an almost complete loss of power. It doesn't turn into a 500cc single but the power loss is so great I have to whip in the clutch and coast to a halt. It happens within 1-3 miles. The engine doesn't stop and ticks over OK. I have kept the throttle wound open to `clear its throat` but only when in a straight line.

It recovers power within 3 seconds or so. Once the loss has happened it may not occur for weeks or months,

happened about 5 times in total since July 2010.

Mileage is 5500. The dealer replaced the filters in the tanks & the problem has gone away.

Thanks for the info. I'm having the same problem on my 2012 with 7000 km on it. First noticed it cutting out at 8k rpm then rapidly got worse after the next 300 km (while on a trip) to the point that the bike would stall in first gear when attempting to accelerate. The only fault code I got was for the 'circuit ignition pulse generator' (FI two short flashes) when the bike would not start. This was intermittent, but the power loss occurred every few seconds and the bike was not ride able. I became a road hazard. The trip ended with a 9 hour tow back home. I'd recommend carrying a spare filter kit or alternate solution.

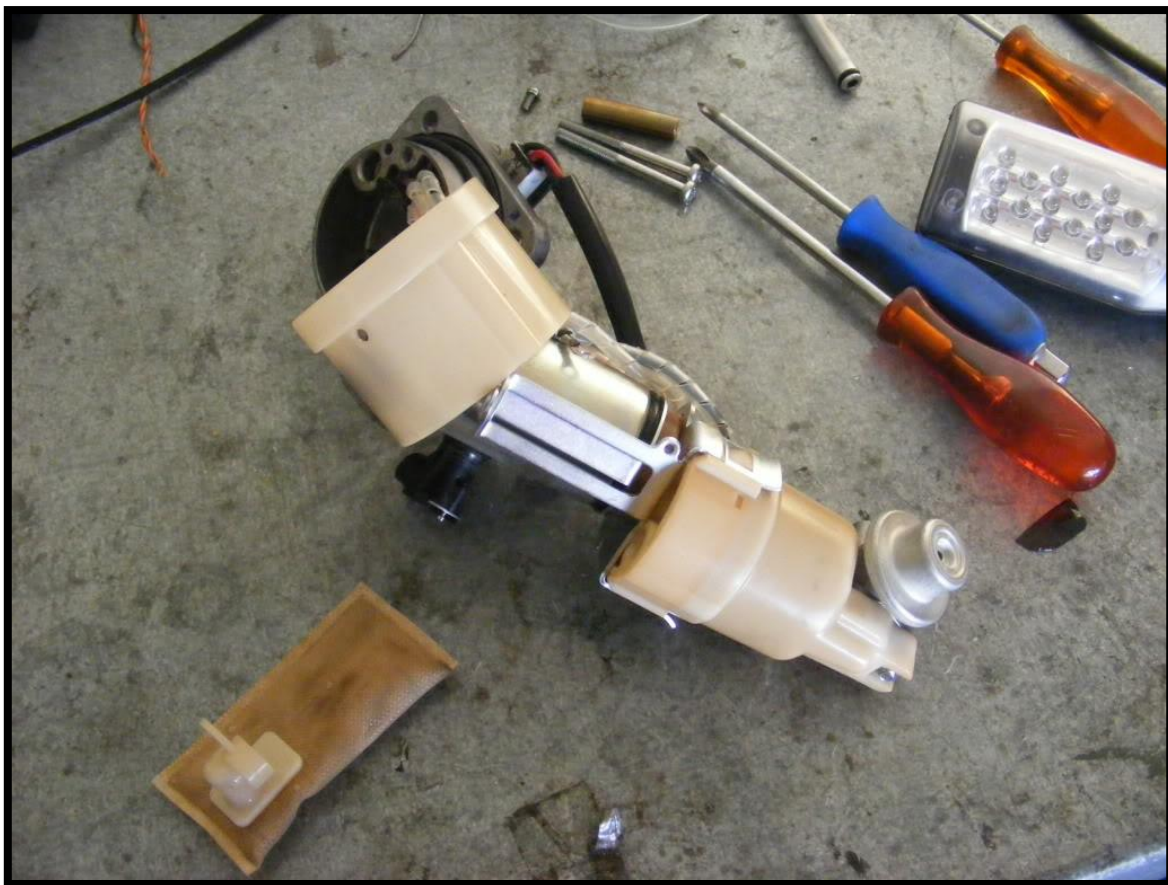
Mine has done the same thing started on my way from work on Thursday, it cuts out when you get on the throttle hard, if you open the throttle normally it will rev through, so I pulled my fuel pump out on the weekend to find the tea bag filter blocked up, I cleaned it out & ordered in a filter kit yesterday, I will be fitting the filter kit today.

I can't believe the price on the 2 filters, I will make up a spare set using the old one as samples for the next filter change, I have ordered in a tea bag filter from the UK & will modify it to fit the KTM pump & will source the main filter when I have the sample, I will post what I did so others can save some money.

[http://www.ebay.com.au/itm/270802983803 ... 1439.12649](http://www.ebay.com.au/itm/270802983803...1439.12649)

A photo's after I cleaned the tea bag filter, it was completely black & blocked before.





KTM



KTM



KTM



KTM



KTM



Got the fuel filter kit today Australian AUD\$140.00 & what a joke the main filter is, it is way to small to do any high mileage no wonder it has blocked up. Next time I will fit a Z201 inline filter as the main filter & remove the small KTM round filter completely.

I used the new modified filter kit with different tea bag filter.

The replacement fuel filter has fix the starving fuel problem.



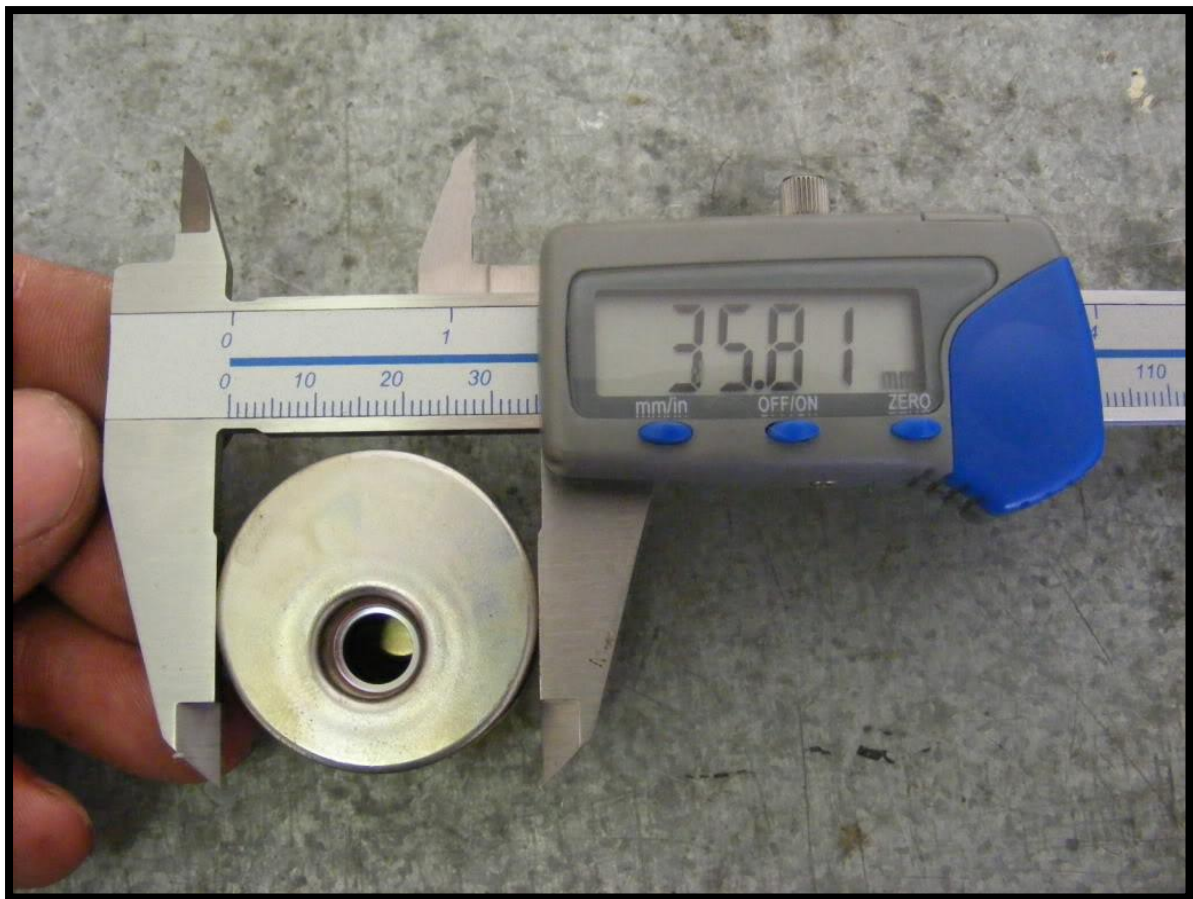




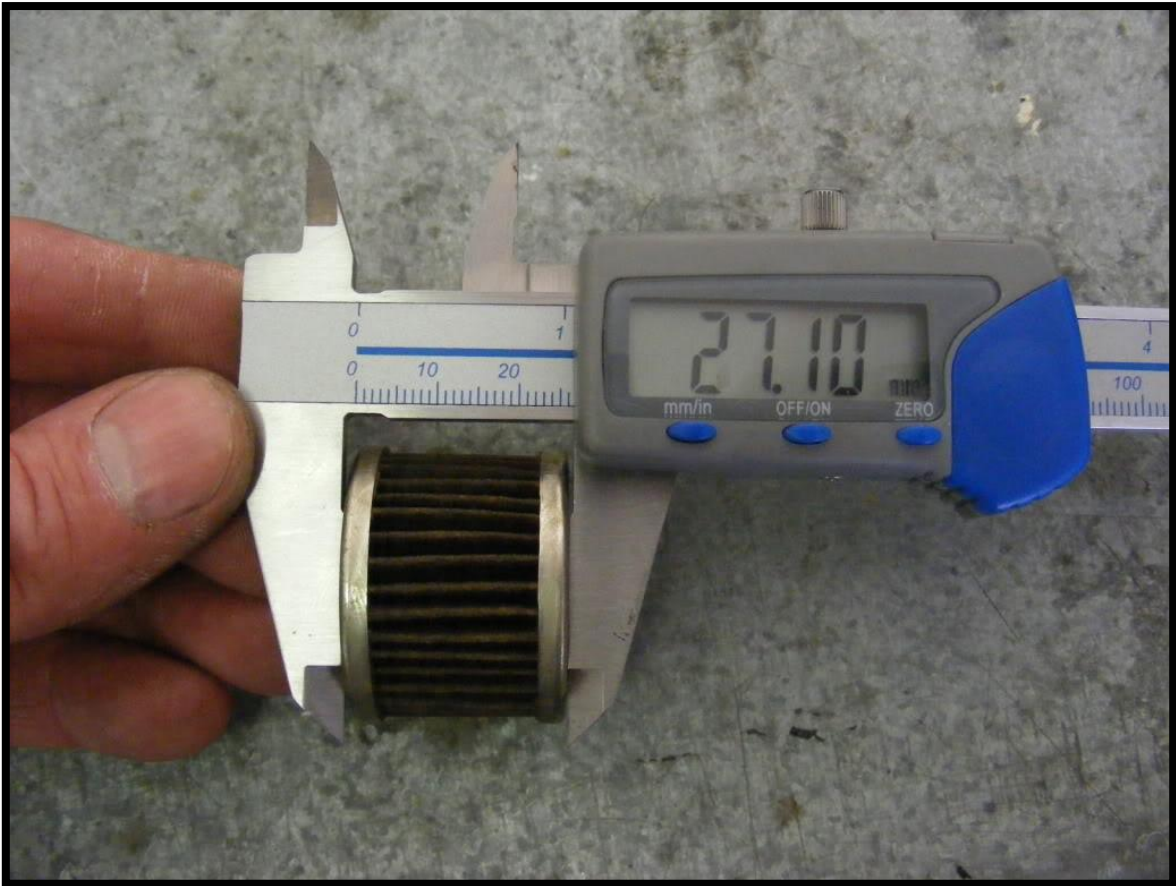




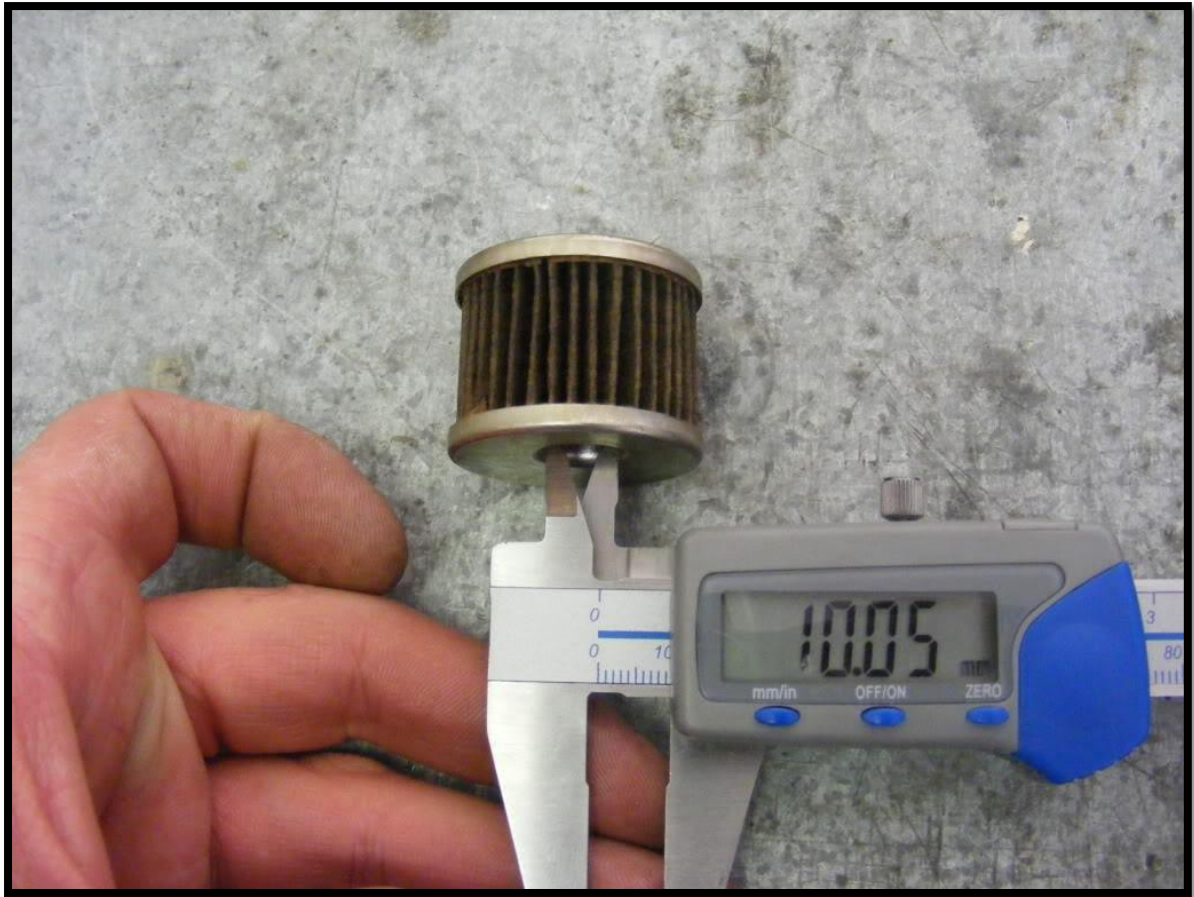
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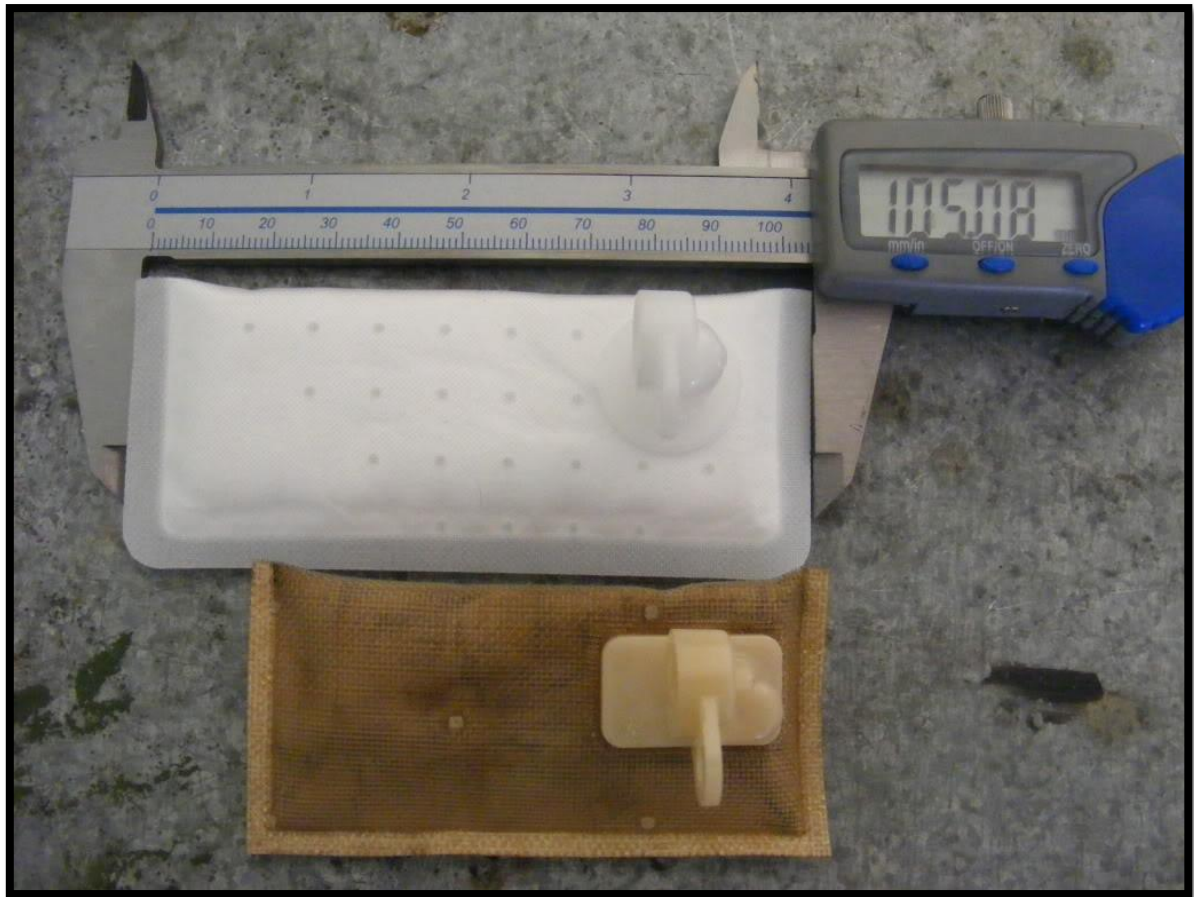
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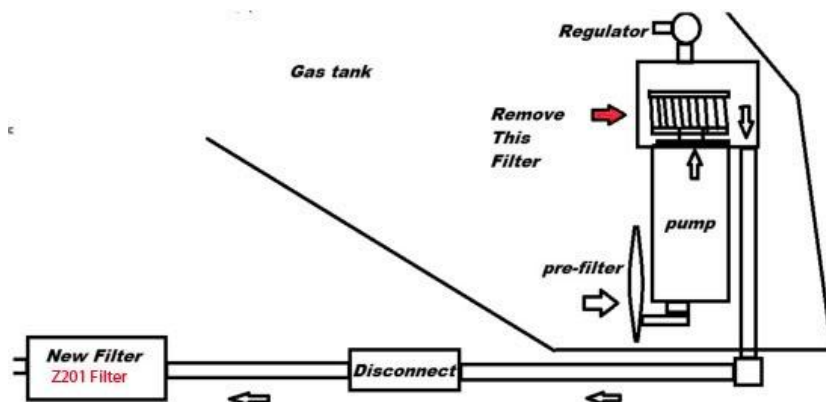
KTM





A work around mod to same on the expensive KTM filters.

May be next time I will use an inline filter & the modified tea bag prefilter.



This is the tea bag filter I bought below & will sew in the OEM plastic connector from the old filter to the new filter. My idea was to cut the old plastic connector out of the old filter leaving some cloth material all the way around the OEM connector, make a cut in the new filter with just enough room to push the plastic internals into

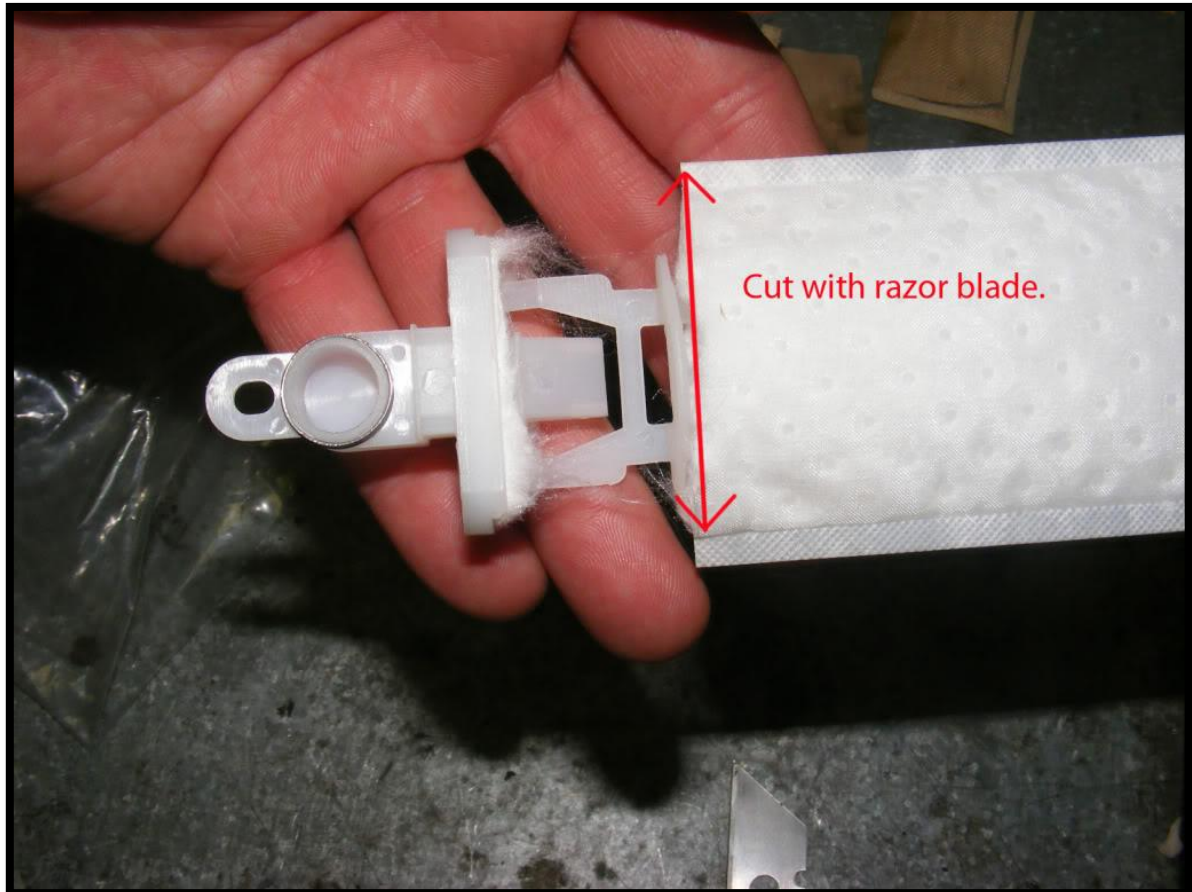


the new filter then stitch up the OEM connector to the new filter, then fit an inline filter & the whole job should cost 20 guine at the most.

[http://www.ebay.com.au/itm/Walbro-Tank- ... 3f0d1d9b7b](http://www.ebay.com.au/itm/Walbro-Tank-...3f0d1d9b7b)

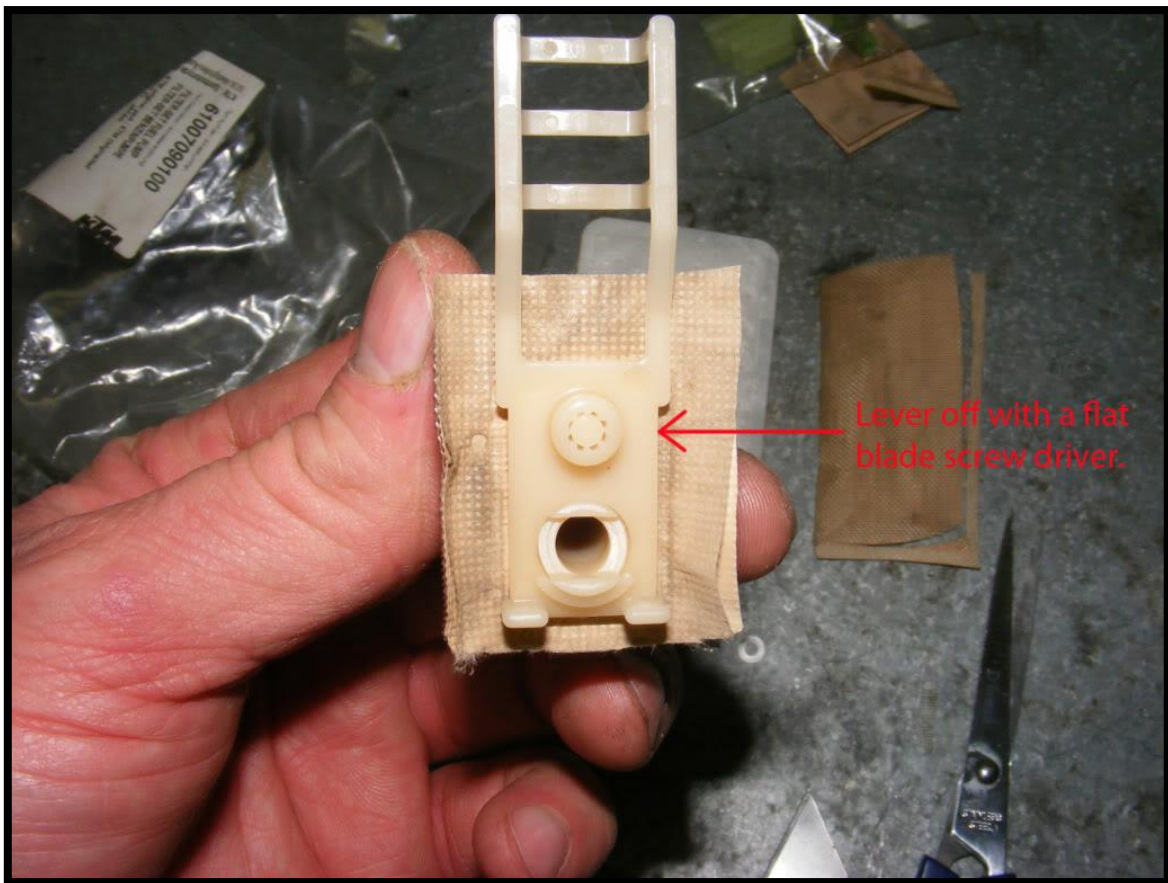
I would run a pre-filter.

Here you go the Kev tea bag filter mod, this mod will cost you \$6.33

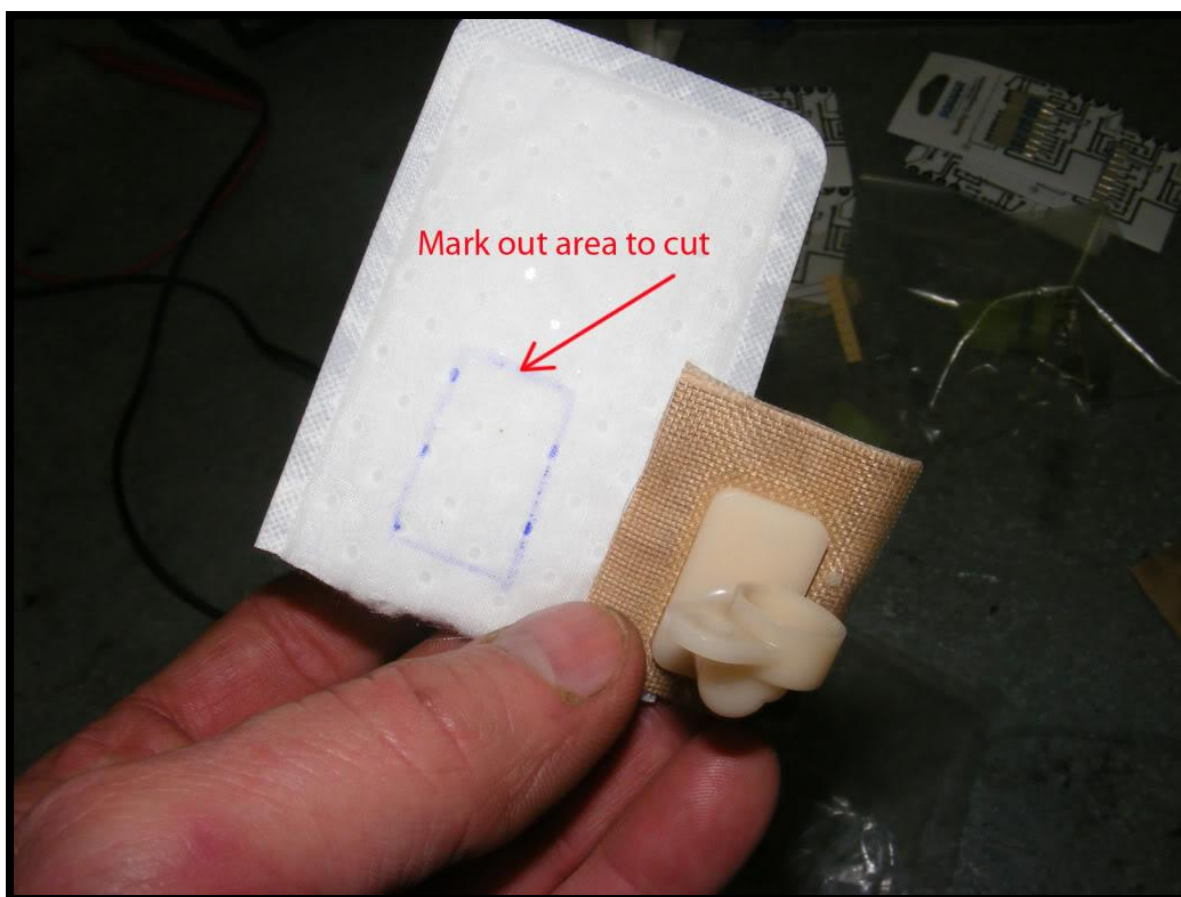


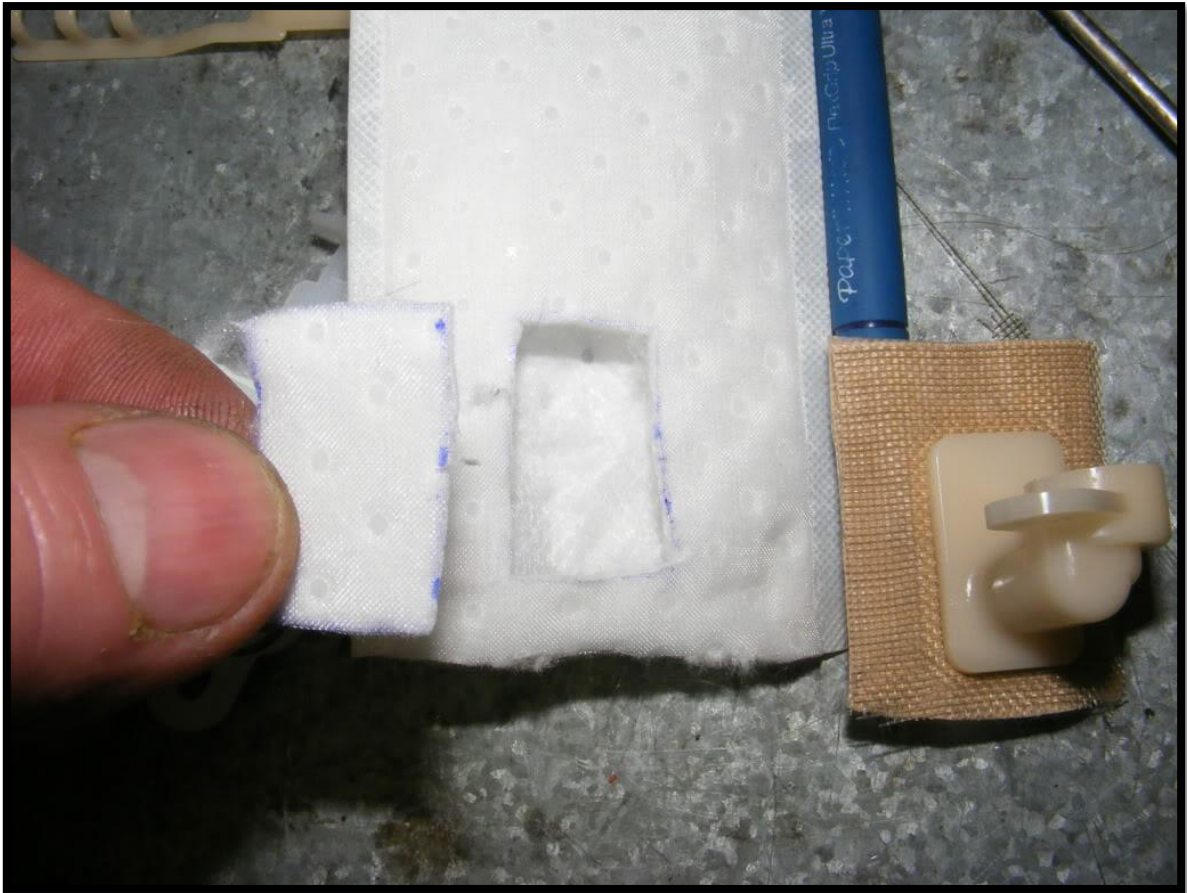
Cut out old fuel pump intake as shown below



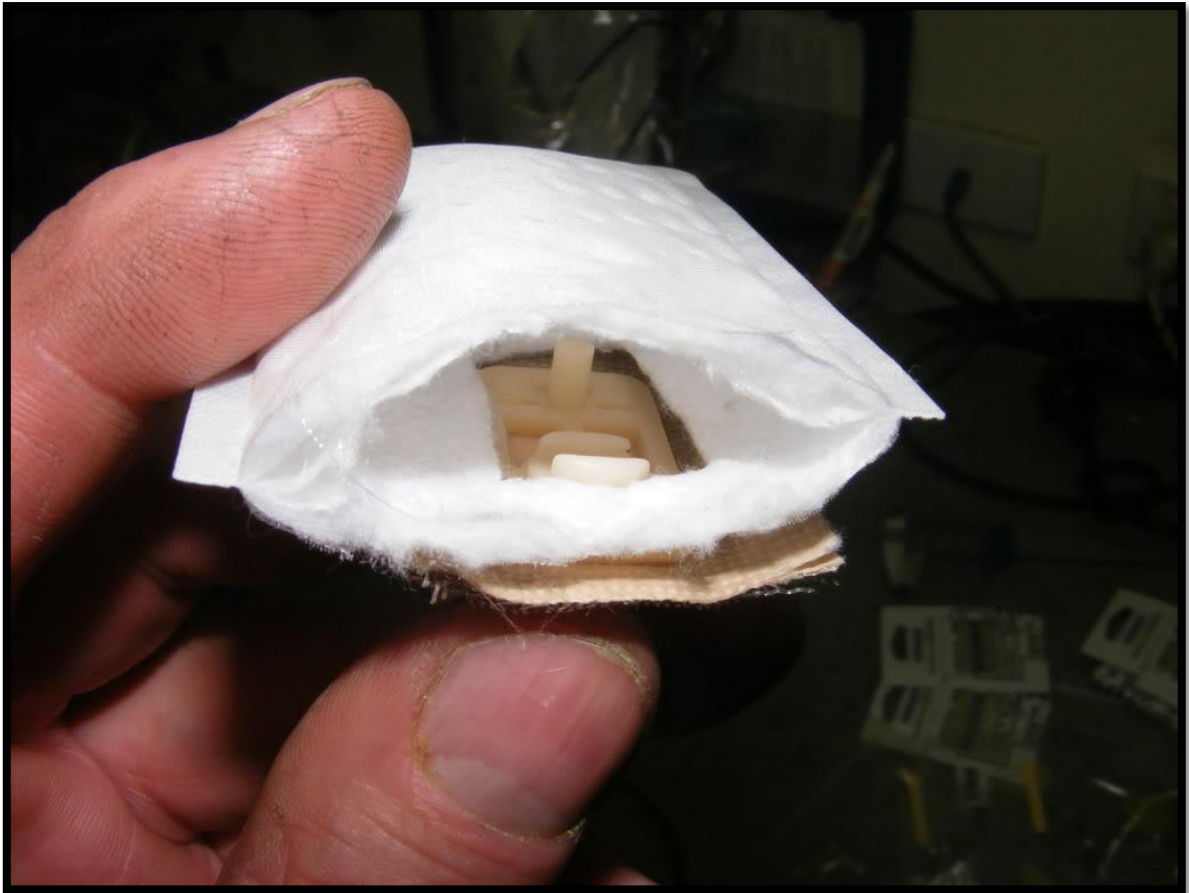


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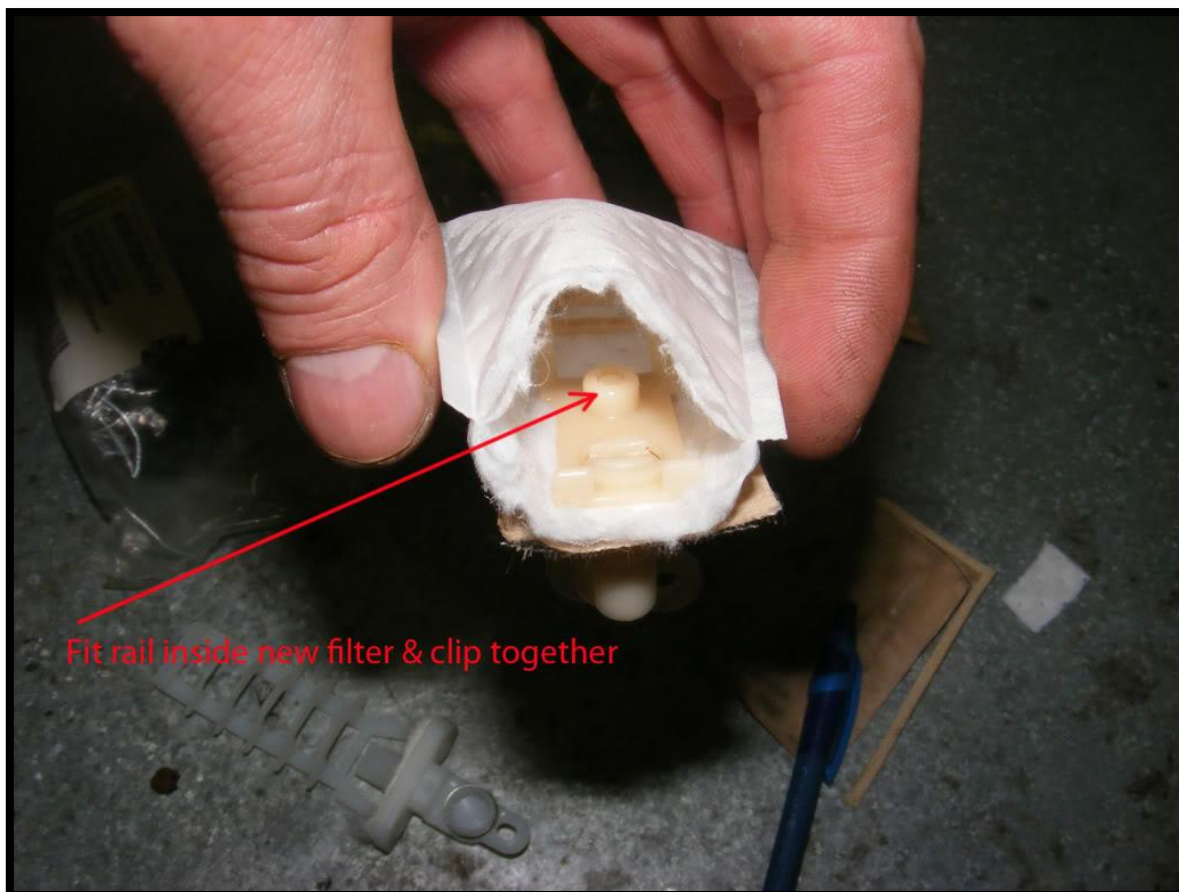




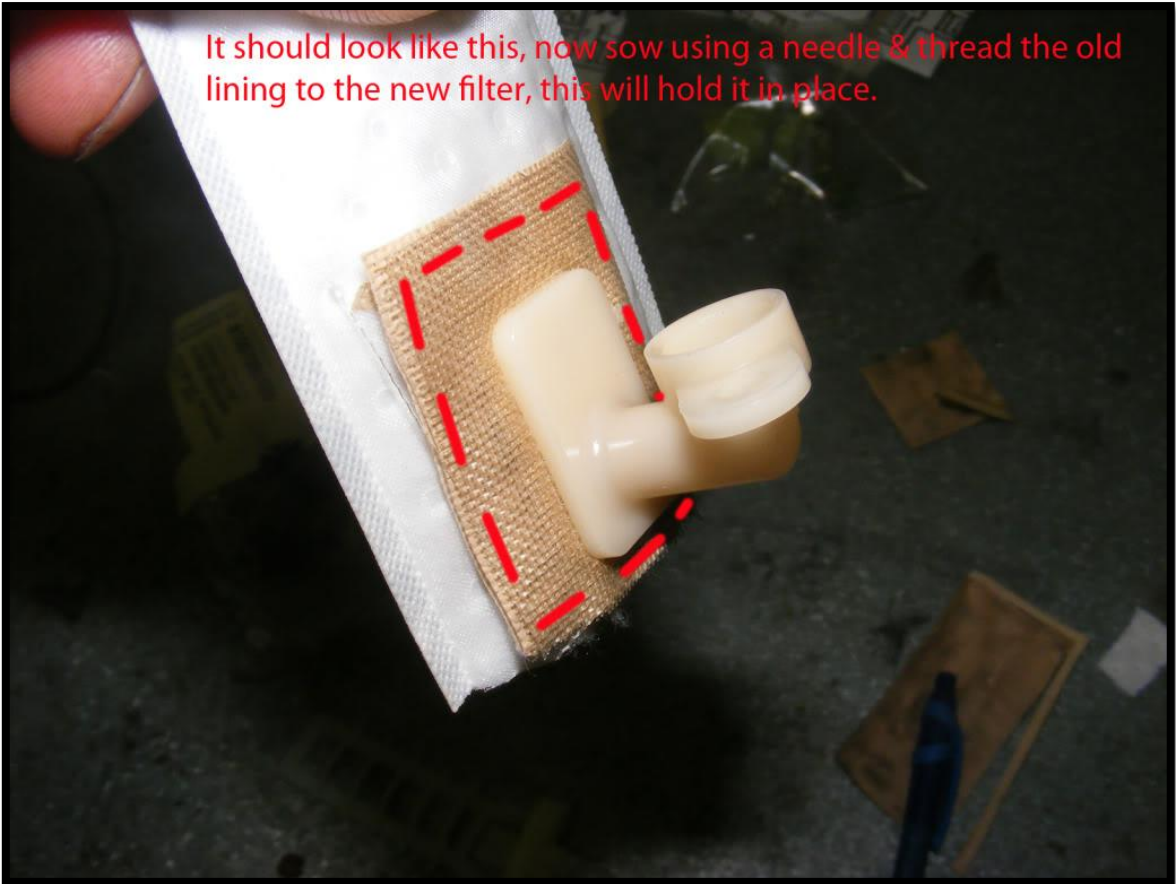
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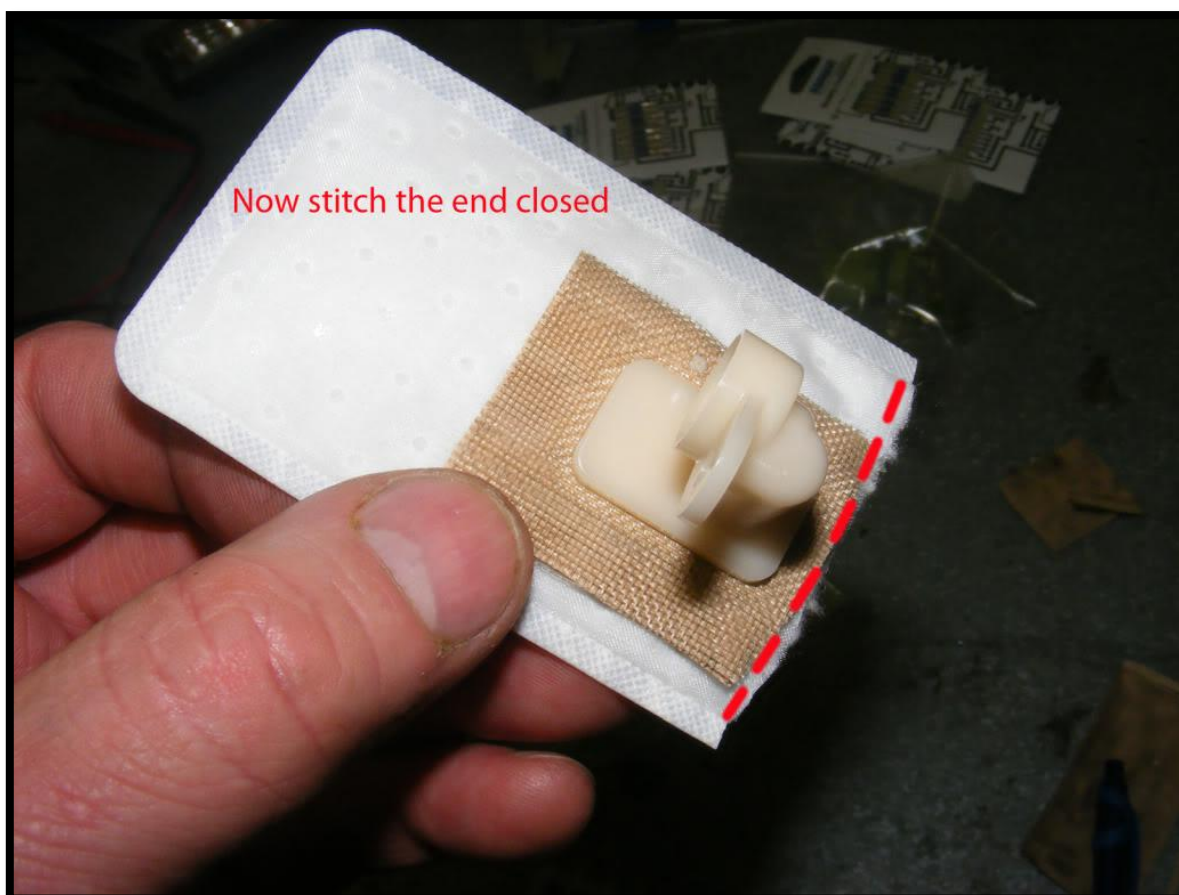


KTM



It should look like this, now sow using a needle & thread the old lining to the new filter, this will hold it in place.





CJ DESIGNS KTM 990 FUEL PUMP O-RING KIT

Why do you need to replace your fuel pump o-rings? We've seen them swell up from ethanol in the fuel and they can be difficult to re-install without pinching or tearing the o-ring. You won't know you have a problem until you have your bike completely back together and it leaks fuel! This o-ring kit is cheap insurance when you're doing any work on the fuel pump.

The KTM O-ring kit is very pricey at over \$43.00. Save money and insure a leak free installation with this kit that you'll only find at CJ Designs/Dual Sport Warehouse.



<http://www.dualsportwarehouse.com/CJ-DESIGNS-KTM-990-FUEL-PUMP-O-RING-KIT-CJD-FPO.htm>





10 SOME KNOWN PROBLEMS

10.1 STALLING

Check your clutch switch using a millimeter, the connector is behind the head light.

I once had a problem with mine cutting out when slowing down & it was my clutch switch not sending a signal to the ECU to say the clutch has been pulled in. The idle stepper motor needs this signal to lift the idle to 2000rpm as a dampener when the revs are dropping when the load is taken off the motor with the clutch is pulled in, the clutch switch acts like a dampener signal & raises the idle speed briefly depending on which gear you are in so the bike does not stall when slowing down or changing gears.

Have you ever removed your clutch lever? If you have a small bush falls out of the clutch lever & you might not notice that it has fallen out, when you put the lever back without the bush the clutch switch won't work & it will cut out randomly, I found this out the hard way.

10.2 CLUTCH SLAVE CYLINDER LEAKING

[Ever wondered why Clutch Slave Cylinders fail?](#)

Yup so have I.

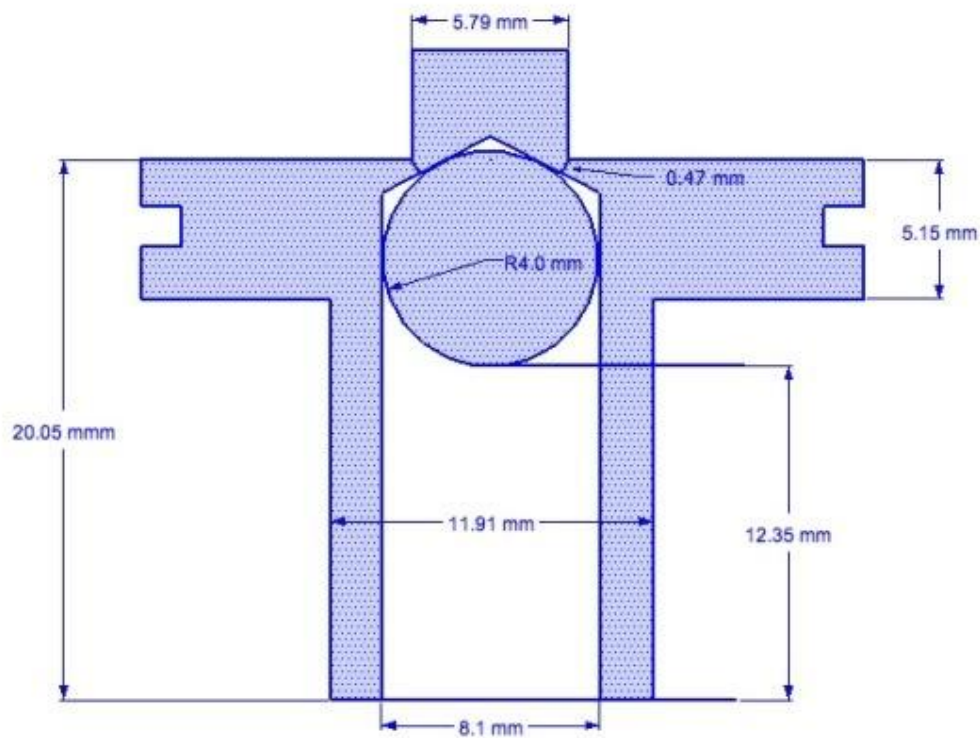
And I know that there are better replacements for the original out there but I've never seen an adequate explanation as to why they fail. Some say heat, others say the twisting moment Etc. but nobody seems to have explained why the mysterious cracks around the little knob that locates the spring. As shown below:





Anyway, given that I couldn't find a detailed explanation I thought I'd do a few measurements myself on my clutch slave piston. What I find is that KTM probably made a mistake in the tooling for the piston. According to my measurements (which are probably a bit vague) and assuming they drilled the hole containing the ball bearing with a 120 degree drill bit, they drilled way too deep to allow adequate material for strength. If you look at the diagram below which is roughly to scale you'll observe that the hole with the ball bearing is only about 0.47 mm (half a mm of metal) from the outside edge. Under constant use that half a mm gets fatigue and cracks. If they'd have backed off the depth a bit in the design we'd have probably have had no problems.





Here is an update on where I'm at.

Originally I speculated that the piston master was incorrectly made resulting in the metal being too thin at the smallest point. My curiosity eventually got the better of me and I sacrificed my piston by taking a pair of pliers to it. Lo and behold the thing fell apart with no effort but rather than cracking at the thinnest part it actually cracked at a slightly thicker part as shown below. Interestingly, my calculations were more or less correct and the design flaw is shown (in my opinion) in the photo:





I then came up with a number of options for fixing the piston but the easiest method looked to just drill all the way through the piston from the open end, re-thread the bore (3/8 BSF is perfect), drill for a 1/4 ball-bearing but about 1mm less depth than the original, then clean up both end on the lathe. Material was brass and the pictures below show the arrangement before the clean up. The thread was sealed with Loktite bearing glue to stop any fluid leaks.





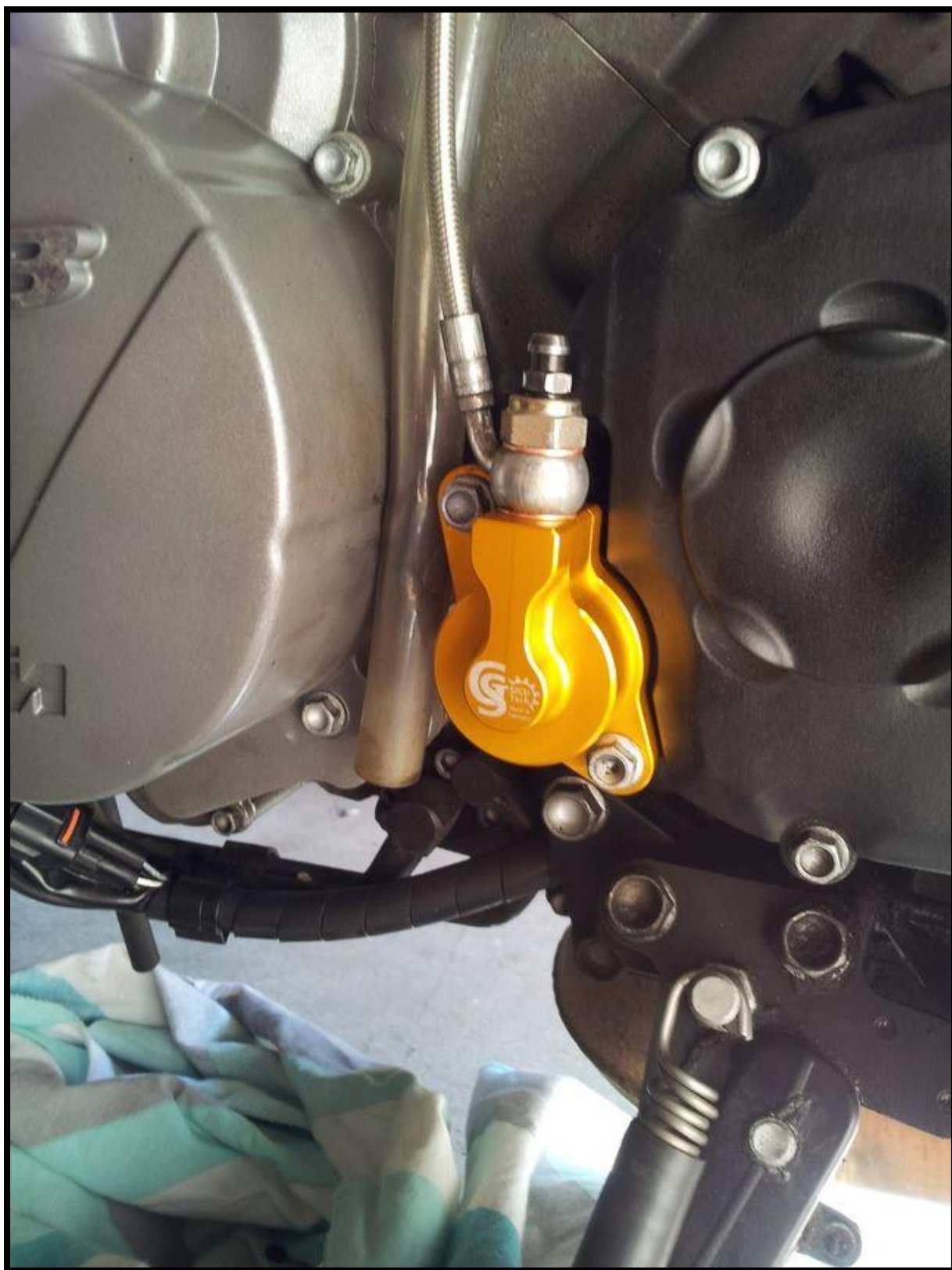
KTM



The finished thing effectively now has a smaller bore as per Kowekiller's arrangement and a shorter hole for the rod. I was a bit concerned as to how much shorter to make the hole as I didn't want to accidentally eliminate the clearance gap and make the clutch slip. On this issue I suspect there is plenty. Hope this helps.

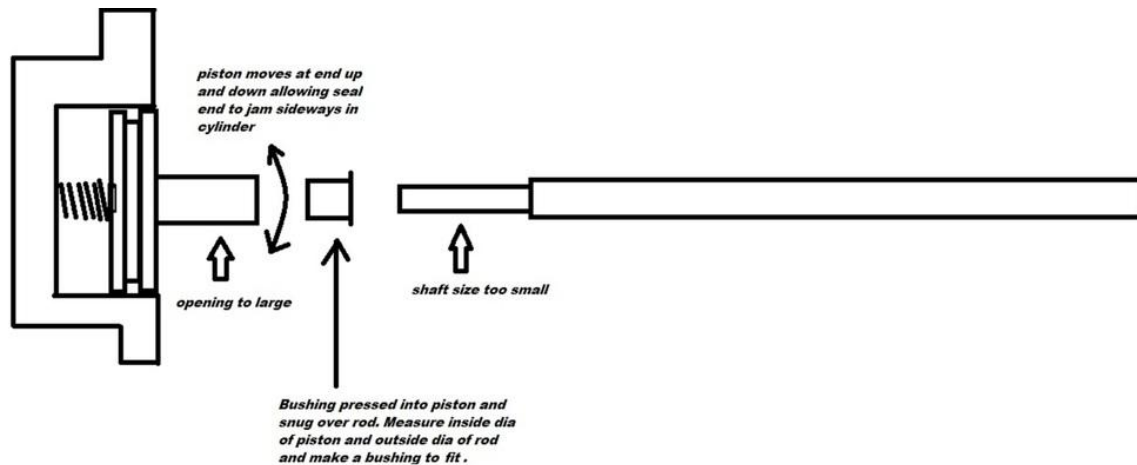
If anyone wants to donate any old clutch slaves I'd still like some to do some other experiments 😊





KTM

So my clutch got stuck in the half way pulled position a week ago. Could not go anywhere for a couple of minutes sitting at a light. Took the slave cylinder apart and found some more great stuff KTM did. If you look at the piston on the slave cylinder and the rod which it slides over you'll find a rod that does not fit worth a crap (tons of slop) which in turns allows the piston to rock sideways in the slave cylinder. Quick fix is to make a bushing to fit the end of the piston (good snug fit) and thick enough to slide over the rod with a snug fit. This will eliminate the piston trying to cock sideways and jamming in the cylinder since its supported from two sides now. FYI



10.3 VOLTAGE REGULATOR 990

A few of the 990 boys are fitting these when their regulators pack up

SHINDENGEN FH020AA REGULATOR W/CONNECTORS /REPLACES FH012AA



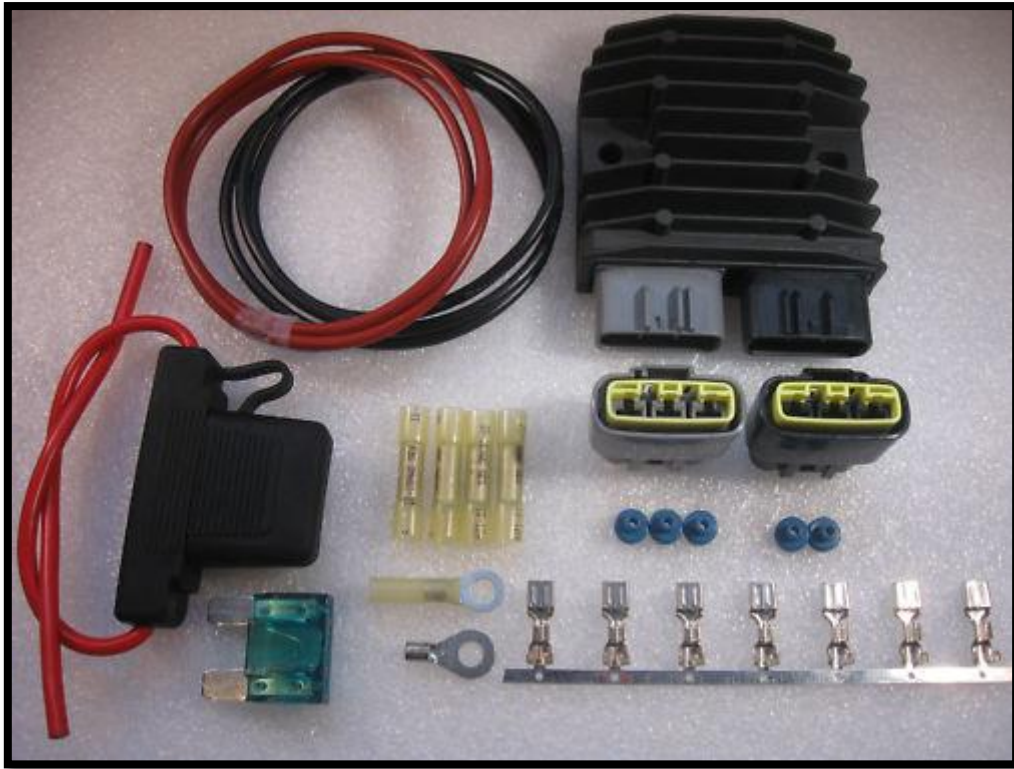
NEW Shindengen FH020AA voltage regulator with Furukawa weather pack Connectors

Note: Shindengen has replaced the former **FH012AA** regulator with this updated version, the new part number is **FH020AA** . The updated version is physically the same size only minor changes have been made to the heat sink casting.

If using this regulator for applications other than oem, for your reference the mounting center to center is 68mm to 70mm using 6mm bolts the bolt center could be filled wider or a adapter plate could be made for other mounting applications.

<http://www.ebay.com/itm/ws/eBayISAPI.dll?ViewItem&item=380446591982&refid=store&ssPageName=STORE:HTMLBUILDER:SIMPLEITEM>





SHINDENGEN MOSFET FH020AA REGULATOR/RECTIFIER

Note: Shindengen has replaced the former **FH012AA** regulator with a updated version, the new part number is **FH020AA** . The updated version is physically the same size only minor changes have been made to the heat sink casting.

KIT INCLUDES

- * WEATHER PROOF CONNECTORS FOR SHINDENGEN REGULATORS
- *COMPLETE INSTALLATION INSTRUCTIONS WITH PICTURES
- *WEATHER PROOF MAXI FUSE HOLDER
(MAXI FUSE HOLDER HAS 10GAUGE WIRE AND CAN HANDLE 55AMPS)
- *30Amp MAXI FUSE (BUSS BRAND)

turn off for a while and cool off.

This regulator is capable of 50amps continuous 3 phase and 30amp single phase.

Maxi fuse protected, unlike circuit breakers which over time can get weak and be prone to nuisance tripping.

(NOTE)Not for motorcycles with 5 wire stators in which 2 of them are for brushes.

For your reference the mounting center to center is 68mm to 70mm using 6mm bolts the bolt center could be filled wider or a adapter plate could be made for other mounting applications.



Often the stator has failed and the regulator gets the blame. A stator is difficult to check completely as they often fail only when hot. These simple checks will find some bad stators, but a stator that passes these checks may still be defective.

1. Check the resistance between the leads, this is normally under 1 or 2 ohms. If you have a 3 phase stator, the resistance between each of the 3 lead combination's (AB,AC,BC) should be equal. If you see higher resistance, or unequal resistances, the stator is bad.
2. Check the resistance to ground, it should be well over 10 Meg ohm.

Battery condition is important. **No regulator can make up for a bad or weak battery.** If in doubt charge your battery and have it load tested, or simply replace it. ALWAYS START WITH A FULLY CHARGED BATTERY***3 FT OF 10 GAUGE PRIMARY WIRE RED**

***3 FT OF 10 GAUGE PRIMARY WIRE BLACK**

*** RING TERMINALS 3M (POS. RING TERMINAL W/HEAT SHRINK END)**

***(4) 3M BUTT SPLICE CONNECTORS (W/HEAT SHRINK ENDS)**

This is a UNIVERSAL regulator/rectifier kit and charging system upgrade kit. The kit can be used to upgrade 2 wire and 3 wire stator systems on all makes and models of motorcycles.

This voltage regulator is great for replacing existing undersized or obsolete regulators.

The advanced MOSFET construction will run cooler than all OEM diode style regulators.

In addition, this rectifier has overheat protection, rather than burn up it will simply

FH012AA units were/are installed on the following Yamaha models:

YZF R1 -- 2007 to 2010

FJR -- 2006 - 2009

The Yamaha service manual identifies no: fh012aa and it's Yamaha Part no: 1d7-81960-00

I've been told Recommended Retail in Australia is \$318 or \$349.45 ..who knows?

Alternately you may be able to pick one up from a wreckers to save some money. They also come up at ebay.

Apparently these have been installed in certain jet skis tho. I couldn't tell you which ones.

Shindengen also make the FH010BA (used on late-model Kawasakis i.e. ZZX10 /14) and FH008EB, FH010, FH014. Again I can't tell you what they come on or all the various other suitable applications etc. but you can research further via the links below.

Shindengen's website, which provides some specs and a downloadable pdf is here:<http://www.shindengen.com>

Now the next thing to know is that the RR units have specific connector plugs. These are made by FURUKAWA.



For those of you in the States, good news there's a distributor (Eastern Beaver) who can supply all the connectors and wiring here:

<http://www.easternbeaver.com/Main/El...onnectors.html>

For the Aussies, I couldn't find a distributor here. I emailed Furukawa enquiring after distributor but received no response. Checked with Yamaha Australia and they don't sell them separately. Good luck with a wrecker. My project was going along swimmingly up to this stage and I was too impatient to order a set from the states so I made other arrangements re the connectors. Perhaps I'll remedy that someday and get the right ones.

Here you will find further info on installation but more importantly they can supply the reg/rec unit itself plus the other bits n' pieces (wiring etc.)

\$115.00 plus \$9.00 S&H. There is also a handy wiring diagram.

<http://lightningcam.com/Shindengen%20...rade%20kit.htm>

So to upgrade the regulator rectifier on 748' from 1995-1998 you'll need:

Shindengen FH012AA

Replacement wiring (see Shazaam's post for recommendations) :

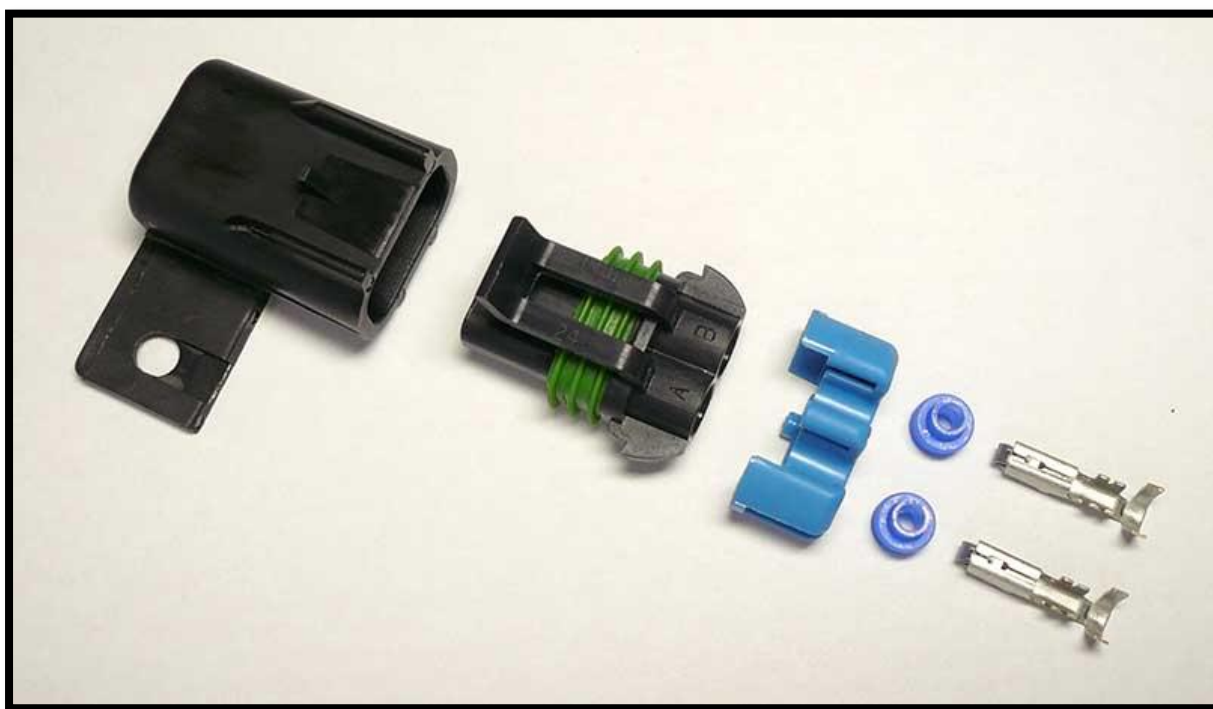
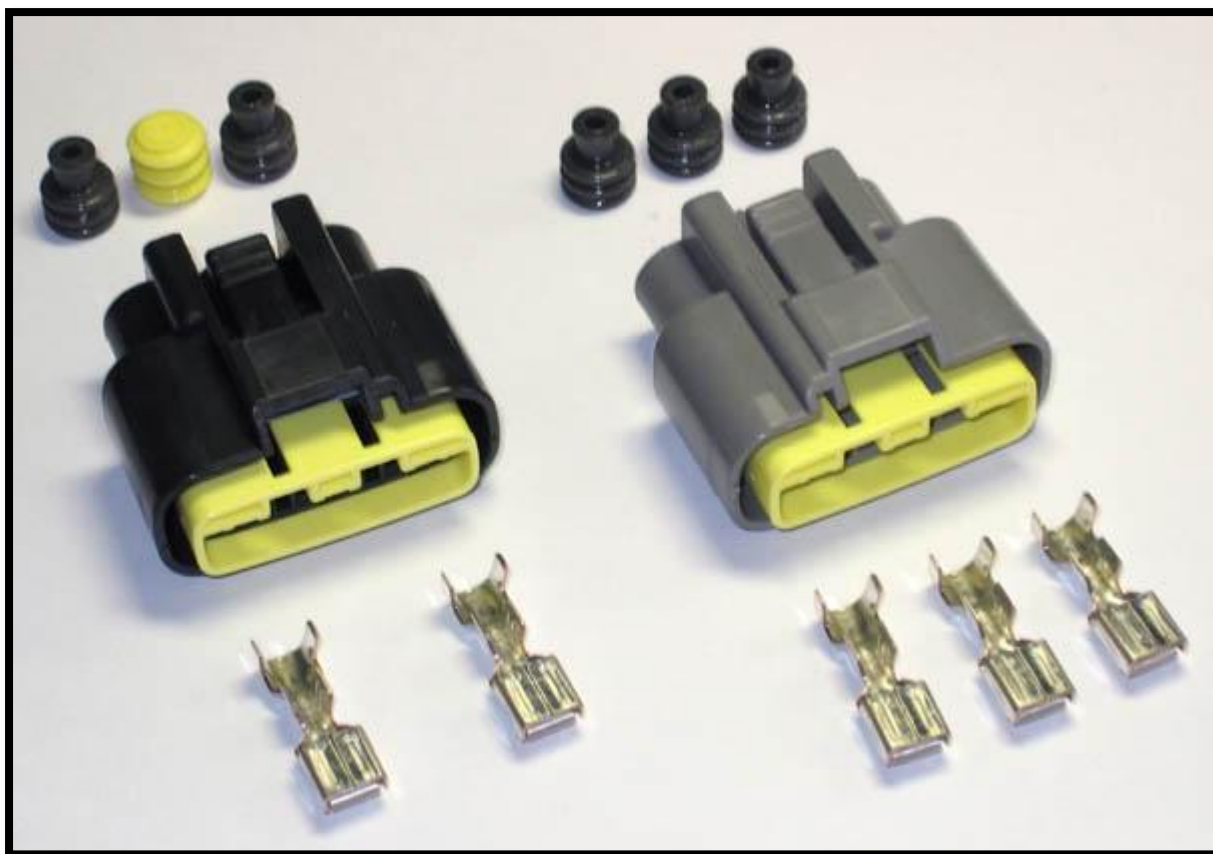
Furukawa connectors x 2

Heat shrink

30amp blade fuse

Suitable blade fuse holder (preferably good quality and water proof) frequently recommended is the Metri-Pack Fuse holder





As with my bike, being single phase there are two wires from the stator. Connect these two wires to any two of the three terminals of the gray connector on the left. Don't worry about the left over terminal, just leave it or if you like slip a piece of heat shrink over it if you don't have the proper connector.



The black connector on the right is for your battery connections. The innermost terminal is positive. Run your new wiring from here to positive on your battery. If you like, and probably recommended, put your 30amp fuse set up between the RR and your battery + terminal. The outermost terminal is for your negative battery wire.

If you're more the visual type:

wires from stator REGULATOR RECTIFIER UNIT

-----> to one of the three terminals grey connector

-----> to one of the three terminals grey connector

+ battery-> fuse --> inner + black terminal

- battery-----> outer- black terminal

After two failures I decided that Shazaam's recommendation to replace the original wiring was well worth taking so I purchased some good quality silicone coated wire. Given the decreased heat factor I chose to leave the RR in it's original location however I did have to make a new mounting bracket which was pretty simple, just a decent piece of aluminum plate cut to an appropriate size and drilled for mounting to the bracket below the battery and to mount the rectifier. I went all out and drilled a couple of extra holes and inserted rubber grommets to pass the wires through safely.

There are other options for replacement wiring (see link above) but if you'd like to use silicone coated it can be difficult to source. Try a place which repairs electric stoves, they use it all the time due to it's excellent heat resistant properties. In Sydney you can buy it by the meter from The Stove Connection 1/71A Rhodes St Hillsdale. Ph: 9661 1088. www.stoveconnection.com.au

I also removed the stator and soldered in the new silicone wire to completely eliminate the inadequate stock wiring. This took some mucking around as the new wire was too thick for the original rubber sleeve. I wanted to protect the wiring along it's entire length so I sourced some suitably sized three core wire from a scrap metal recyclers and removed the three inner wires leaving only the rubber outer. I then passed the new wiring through the rubber hose sealing the stator end with oil resistant silicone. Some sealant was also necessary at the wire's exit hole in the crank case cover.

FURTHER READING:

INFO ON CHARGING PROBLEMS, DESIGN AND WIRE GUAGE SPECS:

<http://www.ducati-upnorth.com/tech/chargingfailure.php>

TRIUMPH FORUM EXTOLLING THE VIRTUES OF:

<http://www.triumphrat.net/speed-trip...r-upgrade.html>



GV650 Voltage Regulator Upgrade

<http://www.alternativecruisers.com/i...;topic=12227.0>

MORE DISCUSSION PAGES:

<http://www.advrider.com/forums/showthread.php?t=496199>

<http://eviltwinsbk.com/forumz/index.php?topic=276.0>

<http://www.apriliaforum.com/forums/s...74&mode=linear>

<http://www.scribd.com/doc/32290153/S...tifier-Install>

VIDEO OF AN INSTALL:

http://www.blip.tv/file/2375590?utm_...edium=aolvideo



10.4 STEERING HEAD BEARING

The steering head bearings only seem to last around 15000kms for the forum feedback we are receiving, from what I have seen from mine they were under greased & rusted out. I bought a set off EBay.





KTM



KTM



KTM



KTM





KTM

11 ACCESSORIES

11.1 DIFFERENT SMT SCREENS

<http://www.calsci.com/motorcycleinfo/KTMSMTprod.html>



Vented for minimum turbulence and back pressure

Available in three heights

Shape designed to complement the lines of the Supermoto Touring

Excellent coverage of torso.

Very quiet cockpit area, with much less noise and turbulence than stock

No back pressure

Made from 4.5mm thick (3/16") DOT certified impact resistant plastic.

Laser cut for precision aerodynamics and fit

Includes storage cover, micro-fibre cleaning towel, and mini-spray bottle of windshield cleaner.





KTM

Givi D750S Windscreen 990 SMT 08-11



Givi D750S Windscreen 990 SMT 08-11

Replacement screen for KTM 990 SMT

49cm Height x 41 cm Width

<http://www.revzilla.com/motorcycle/givi-d750s-windscreen-990-smt-08-11>

<http://www.cmc bikes.com/givi-screen-ktm-990-smt-09.html>



11.2SMT LUGGAGE



KTM



<http://www.ebay.com/itm/KTM-990-SMT-SMR-BLACK-ALUMINUM-SIDE-CASES-CARRIER-SYSTEM-SADDLEBAGS-LUGGAGE-/390349364253>

<http://www.bikegear.co.za/03f36fe1-f3d7-45b4-b72b-998083c00857-9.html>

KTM 990 SMT & SMR BLACK ALUMINUM SIDE CASE AND CARRIER SYSTEM

FOR 2010 & 2011 MODELS





Figure similar /
Abbildung ähnlich



KTM



This listing is for a **brand new** KTM black aluminium side case set and Quicklock carrier system for 2010 and 2011 KTM 990 SMT and 990 SMR models. The 2 included black aluminium side cases have an internal capacity of approximately 37 litres and black plastic corner protectors. The Quicklock carrier system is made out of powder coated steel for strength. **Add a ton of storage to your bike and be ready for any riding adventure!** *This is a special order kit that typically ships in 5 business days.*

We have many other items in our eBay store, including **lots of other KTM luggage**. Please click on the button below to visit our eBay store and search through what we have listed. You can also check out what's going on at Freedom Cycle by visiting our eBay About Me page. Of course, if you are looking for something we don't have listed here, please give us a call at 603-225-2779 x 254 or send us an email.





Quicklock carrier kit black alu cases

Price: \$349.99

KTM Part Number(s): 62012020200

This kit contains the quicklock carrier system (which stays on the bike) and the adapter for our KTM Adventure cases (which can be removed within seconds from the bike). Cases are not included, please order separately! With removed adapters you will nearly not recognize that you have mounted a carrier system on your bike for fullsize cases! For 990 SM/SM-R/SM-T 08-09

<http://www.ktmcyclehutt.com/ktm-parts/ktm-parts.php?sku=62012020200&title=Quicklock-carrier-kit-black-alu-cases&year=&ktm-model=&category=Bags-Mounts&fitment=ktmsupermoto>





<http://www.giviusa.com/My-motorcycle/?ma=KTM&mo=990-SMT-09>

Givi Rapid Release Tubular Sidecase Racks (KTM 990 SMT, '09-)





These rapid release tubular sideracks are easily removable and will allow you to mount any Givi Monokey sidecases. Top rack not included.

All hardware needed to mount two Givi side luggage cases included -- no additional special fitting kit or parts required. Typically installs quickly using simple hand tools in about an hour. Mounts standard Givi Monokey side luggage cases, such as the E21 Cruiser, E36 Elegant, E360 Delux, E45, or E41 Keyless cases. No welding or cutting of existing frame or body parts required. Tough black enamel finish. May have fitments issues with the OEM license plate brackets as they are different in Europe for which these were initially designed for. May require movement of the license plate.

[http://www.twistedthrottle.com/givi-rapid-release-tubular-sidecase-racks-ktm-](http://www.twistedthrottle.com/givi-rapid-release-tubular-sidecase-racks-ktm-990-smt-09)

[990-smt-09](http://www.twistedthrottle.com/givi-rapid-release-tubular-sidecase-racks-ktm-990-smt-09)

KTM 990 SMT Soft Side Bags





KTM Part Number: 62012025100

Manufacturer: KTM

This side bags were specially designed for the 990 SM-T. They do not only follow the layout of the line and color of the bike, but were also specially prepared to fit the original carrier. This is a lightweight and very quick mounted luggage solution for the next tour.

Fits 990 SMT

<http://www.ktmtwins.com/ktm-990-smt-soft-side-bags>

QUICKLOCK ALU RACKS



The Alu Rack crafted by SW-Motech is constructed of strong lightweight powder coated aluminum. Customized for each model to ensure optical integration on super, touring and dual purpose bikes.



Any Alu Rack can be used as is to bungee items to. The functionality of the Alu Rack is further enhanced by combining it with one of the various adaptor plate options to create a truly multifunctional luggage accessory.

The adaptor plate connects in a few seconds to the Alu Rack and is specifically designed to accommodate popular top case brands such as the Adventure aluminum top case, Givi Monokey/Monolock, Shad and Hepco Becker plastic derivatives. There is even a soft luggage carrier option!

Attach your top case or soft luggage securely and with absolute peace of mind.

<http://www.bikegear.co.za/95c448ce-93fe-4c4d-878e-7eb4f49d0f56-9.html>



Some other versions of luggage fitted to the SMT.



11.3 SLIPPER CLUTCH'S

STM Slipper

One of the first & one of the best mods I have done to my SMR for my style of riding. There are a few brands out there. I am using a STM slipper & it is a great clutch.



STM Slipper Clutch '04-'10 LC8

ADJUSTABLE SLIPPER CLUTCH FITS KTM LC8 MODELS 2004-2010

SKU: FKT-S040

MSRP: 1307.95 Used by the Pros, this system prevents downshift over revs, downshift-braking rear wheel chatter to enable smoother cornering transitions while preserving the engine and reducing tire wear!

The STM slipper clutch brings innovative performance improvements to the street market through the Controlled Engine Braking System (CEB). Highly effective engine-to-clutch-to-rear wheel power management system decreases unwanted engine braking and rear wheel drag when braking hard for a corner. Prevents damage to the engine and gearbox by reducing the mechanical stress caused by the back torque of the engine and avoiding any chance of over-revving.

<http://www.pureperformancecycles.com/Products/Performance/Performance-Clutch/STM-Slipper-Clutch--04--08-LC8>

#####



Yoyodyne Slipper



Yoyodyne KTM LC8 Slipper Clutch

KTM Part Number: 117103

Manufacturer: Yoyodyne

<http://www.ktmwins.com/yoyodyne-ktm-lc8-slipper-clutch>



Sigma Slipper



Sigma Performance Slipper Clutches- race set-up



All clutches in the Sigma Performance Competition Slipper Clutch range are delivered with settings that, with a fresh set of clutch plates, will give a reliable and efficient slipper clutch action. Our very first British Championship Super sport victory with Jay Vincent at Brands Hatch in April 2004 used the 'as delivered' settings.

As standard our clutches are lighter and smoother in operation than the OEM clutches fitted to some sports bikes. Our clutches typically weigh around 1 kilo against about 1.5 kilo's for the OEM slipper items.. so as standard you have quicker throttle response, a smoother and more accurate shifting action and as a result of a ball bearing equipped ramp system and more track sensitive ramp angles you get a much smoother action.

For major changes in feel different ramp angles are required, on several clutches in the range we can supply different angle ramps but these tend only to be for bikes where we feel there is a need for different designs. That doesn't mean you shouldn't try something a little different though. Slipper clutches work by the back torque from the rear wheel forcing the centre of the clutch to rise up its ramps, this in turn pushes the pressure plate off the top of the pack. The more violent the back torque (for very violent think three full racing downshifts and no clutch) the further the centre rises. Once the clutch pack has broken (i.e. the plates are not clamped hard together anymore and the clutch is slipping, the centre stops rising, indeed it starts to fall..as it falls the clutch re-engages, as soon as it does it is driven back up the ramps, starting the cycle again. An equilibrium point is quickly reached.

So let's consider the situation, all our clutches are designed to have a 1mm centre to pressure plate clearance with a fresh clutch pack, what happens if we reduce that distance? Well the clutch works earlier that's what.. When the clearance is set at 1mm there will be a few occasions where a small amount of back torque isn't enough to allow the clutch centre to travel right up the its stroke. If we reduce the thickness of the pack, which brings the pressure plate closer to the centre, then the clutch will work when previously there was not enough back torque to make it work. Where it was always going to work anyway, now it will work earlier, that translates into further before the corner and with less engine braking.....

Adjusting the clearance is quite simple, just remove one of the metal plates and replace it with a thinner one, checking the operating clearance as set out in the CD that came with your clutch. (Care; on Suzuki's only don't forget to readjust the pushrod clutch adjustment next to the front sprocket to a minimum of 0.5-0.8mm slop every time the clutch pack is thinned, do not assume that adjusting the cable at the handle bar will do).

It is possible to run the clearance right down at 0.4mm, but bear in mind heat build-up will change some clearances, and because the clutch is working more it might wear the plates more so the tighter the clearance the more regular checking needs to be done. It goes without saying that if you have your clutch set at 0.4mm and heat closes the gap by 0.2mm mid race then wear of just 0.2mm will result in clutch slip. Race over...

So, at 0.4mm the clutch will work pretty much as soon as you shut the throttle, and



whenever you shut the throttle. At 1.0mm it will work slightly less often and will not work for small amounts of engine braking. All of these clearances change as the friction plates wear, and they can only be adjusted by different pack thicknesses, with Suzuki and Honda clutches we can move things by 0.3mm jumps, on the less subtle twins we can only move them by 0.5mm jumps, and that's close enough.

A rider will feel the difference between 1.5mm and 0.6mm but the difference between 0.8mm and 0.6mm is going to be as miniscule as the measurement!! Remember we don't want a clutch that feels different too easily or normal wear will cause problems. In most case the best friction plates are the standard ones, they appear to take the additional loads placed on them by a slipper clutch in their stride.

A second adjustment is to change the strength of the main clutch springs. The stronger the spring rate the harder the clutch centre has to work to hold the clutch disengaged. The effect is to transmit more engine braking through, BUT it gives the plates a much harder time. You do not have to change all the springs; you can say have 2 stiff ones and 3 (or 4 depending on the clutch) a weaker ones.. just make sure the stiffer springs are distributed opposite each other to equalise the effect. If you do deliberately increase the spring rate for this effect you must monitor pack wear more closely.

Sometimes major increases in power mean stiffer springs are need to stop slippage going forward. Things will work far better if the increase in spring rate is just sufficient to handle the extra power. For some bikes we have built clutches with different angle ramps to ensure that stiffer springs do not affect the gentle slip action we prefer.

Let's have a look at the latest info we have on the various clutches we sell, and remember they are all designed to function just fine with a new original clutch pack, if you insist on experimentation these numbers are intended to provide a little guidance.

And before you start playing too much, remember that we believe the standard numbers, a 1 to 1.2 mm clearance (1.5mm on Ducati's and other big twins) will do just fine for most riders in most situations.

<http://www.moorespeedracing.co.uk/ktm-slipper-clutches/ktm-990-superduke-sigma-slipper-clutch.html>



11.4 CLUTCH SLAVE CYLINDERS

Oberon

As we know these are a week point on our 990's.



Oberon Clutch Slave Cylinder for KTM

KTM replacement Clutch Cylinder

The Oberon Performance replacement clutch slave cylinder has been designed to improve the performance and the looks of the original KTM cylinder. This unit cures the problem of jamming pistons and subsequent failure. The internal piston design, seals and breather hole have been drastically enhanced to prevent fluid leaks and leave a smoother clutch action. CNC machined from billet for lightness, strength and precision looks. With 7 fantastic colours to choose from. Black, Blue, Gold, Orange, Red, Silver and Titanium look

Everything you need is included in the kit.

Also unlike others, this Cylinder will a direct replacement without the need to reposition the gear as it is designed to fit with the clearances of the OEM item.

12 month warranty and a satisfaction guarantee.

- o Smoother action with progressive feel
- o 7 anodised colours
- o Black, Blue, Gold, Orange, Red, Silver and Titanium look
- o CNC machined from billet aluminium
- o Integrated piston guide
- o Genuine 'U' seals for precision action
- o Wiper seal to stop dirt ingress
- o Manufacturers warranty
- o Shaft and dust sealed back
- o Fitting instructions included



- o Copper sealing washers included
- o Simple to install
- o Banjo thread protector
- o Oberon Bleed® System
- o Stainless steel fasteners

UNIQUE DESIGN, Oberon designed a special air pocket deep in the slave cylinder body, this improves the bleeding process due to the Oberon Bleed® System moving air bubbles up toward the bleed nipple. Saving time and fluid making the whole process much simpler for the fitter. The genuine 'U' seals in this product have been CNC machined for accuracy and longevity (we DO NOT use 'O' rings which may fail). Each cylinder is supplied fully assembled sealed to prevent dust and dirt ingress. In all a total solution.

KTM LC8 engine 2003 - Current

<http://www.twinshack.co.uk/prods/735.html>

Sigutech Billet 950 990 1190 Clutch Slave Cylinder



It's not the only LC8 Billet Slave Cylinder out there but we feel it's the best engineered. Bold statement right? If you know, anything about engineering you know that the weak point of the stock unit is the loose tolerances and the fact it uses only one O-Ring. This unit made for the LC8 and RC8 engines utilizes 3 O-Rings on it's piston giving you 3 times the sealing ability and durability. This translates to more



consistent performance and confidence to worry free rides. Bulletproof your ride and pick up one of our Billet Slave Cylinders made for us by Sigutech. You will not regret it.

<http://www.ktmtwins.com/ktm-sigutech-billet-lc8-rc8-rc8r-clutch-slave-cylinder>

Hosi's Clutch Slave Cylinder



For all KTM LC8 and RC8 models

Hundreds of the worldwide inspired and satisfied KTM drivers and *0% failure rate* are the best reputation for Hosi's Clutch Slave Cylinder!

Here we offer the development of our Clutch Slave Cylinder which is highly praised by our KTM LC8 and RC8- customers and tested under extreme conditions.

Technical highlights:

The Clutch Slave Cylinders are using the latest CNC technology made out from aircraft aluminum with a tensile strength that lies within the norm of the steel industry, made this really beautiful and technically highly reinforced work of art.

The details speak for themselves: already, the pressure piston is in a high quality finish!

This piston with an even longer piston length for retaining three sealing rings for better, smoother response and leak-reserves, including pressed-in,



hardened steel ball for pressure rod balancing, is already a masterpiece.

Not to mention the absolute eye-catcher casing with optimal hydraulic oil supply bore, which prevents the infamous tipping. Therefore the oil pressure can act directly from the front on the piston.

Of course, for this product only the finest materials and equipment were used. Convince yourself of this noble product "Made in Germany", made with joy and care. This Clutch Slave Cylinder not only gives additional security against sudden pressure loss and failure of the clutch, but also counteracts tangling up and at the same time an easy going handling. On top of it, you get the most visual upgrading.

http://sigutech.com/index.php?option=com_content&task=view&id=18&Itemid=36&lang=english

KTM LC8 Updated Slave Cylinder



KTM LC8 Updated Slave Cylinder

KTM Part Number: 60032061144

Manufacturer: KTM

<http://www.ktm.twins.com/ktm-updated-slave-cylinder>



11.5SEATS

KTM Ergo Comfort Seat 990 SM/SMT



Quantity in Basket: None

Code:62007040100

Retail Price:\$189.99

<http://www.ktm-parts.com/62007040100.html>



Renazco seat



Welcome to Renazco Racing, tailors of custom motorcycle seats.

Factory motorcycle seats can be quite uncomfortable and while most of us are shaped and built differently, it's quite challenging for manufacturers to build a one size fits all seat.

At Renazco Racing, we specialize in building seats that are ergonomically designed to fit you. We have decades of riding experience and a vast knowledge of motorcycle ergonomics, and we're proud to offer custom hand sculpted motorcycle seats for Adventure, Dual Sport, Off-Road and Supermoto Bikes. Each seat we build is designed to fit you based on several different factors: height, weight, suspension, style of riding and the type of bike you ride are just some of the things we take into consideration. A well thought out combination of foams and materials are used to create a comfortable seat that will change the way your bike will feel.

We welcome you to come in, take a look around and see some of our work. We're here to answer any questions you may have and look forward to working with you.

<http://www.renazco.com/>



Seat Concepts

KTM 990 Supermoto T SMT (2009-2012) Seat Concepts Kit [SKU
KTM990SMT]



Details:

We change the riders seating area so the slope into the tank is now gone and a wider flatter seating area is in place. New wider seat to help keep comfortable on that long commute or sport ride. The added width and foam density will help keep the seat from being an item to stop you from going on that ride or enjoying the bike.

Fits Models:

KTM 990 SMT

Notes:

This photo shows the 'Carbon' fabric.

http://northcoastmotorsports.com/product_info.php?products_id=8327





Seat Concepts dual sport / adventure seat cover and foam kits have a wider seating area towards the rear of the seat for greatly increased comfort on long rides. This better shape helps spread the load to alleviate pressure points. Each seat was designed to increase comfort without compromising your ability to ride aggressively. The more aggressive the bike, the more aggressive the seat kit. The seat cover and foam kits are "Do It Yourself" with detailed instructions for easy installation.

CycleBuy offers **complete seats** for 2009-12 Husabergs and some KTM models for the rider that wants to keep his or her stock seat. CycleBuy complete seats are assembled at our store using new seat pans and Seat Concepts seat cover and foam kits. There is no core charge and you keep your stock seat.

Seat Concepts foams are made from the finest quality products available. Extensive testing and development produced a foam compound that is firm enough to last and supple enough to offer comfort for the long haul. The foams are produced in a proprietary mold for each specific model. Seat Concepts seat covers are made from the finest quality marine grade vinyl products. Seat Concepts kits are designed and manufactured in the U.S.A. by true motorcycle enthusiasts.

http://www.cyclebuy.com/shopping/seat_concepts/index.htm

http://www.cyclebuy.com/shopping/seat_concepts/seats_ktm.htm



12 GLOSSARY OF TERMS

Air temperature

The air temperature in the air box and intake system.

Air temperature sensor

Sensor located in the airbox to detect the temperature of the incoming air.

ATDC

After Top Dead Centre.

Barometric pressure

Pressure of the air in the airbox. See MAP for difference.

Battery voltage

The voltage at the input to the Electronic Control Module (ECM).

BTDC

Before Top Dead Centre (TDC).

Calculated load

The actual volume of air per stroke flowing into the engine, expressed as a percentage of maximum volume that can enter. Provides an indication of the percent engine capacity that is being used (100 % = full throttle).

Catalyst

Device placed in the exhaust system which reduces exhaust emissions by stimulating secondary combustion of the exhaust gases.

Closed throttle position

Throttle position at idle (i.e. against end stop), measured as a voltage and expressed as percentage.

Coolant temperature

The coolant temperature in the cylinder head.

Coolant temperature sensor

Sensor which detects coolant temperature.

Cooling fan status

The 'on or 'off' condition of the cooling fan.

DTC

Diagnostic Trouble Code.



DOWNLOAD (tune)

Sending a revised map or data **from** the PC **to** the bike. See also **READ**

ECM or ECU

Engine/Electronic Control Module/Unit

Engine speed

The crankshaft revolutions per minute.

Freeze frame

A data set captured at the time a Diagnostic Trouble Code (DTC) is set.

Idle Air Control Valve/System (IACV)

Stepper motor air valve controls amount of air to throttle inlet, to maintain idle or warm-up mixture when throttles are fully closed. System not used on latter bikes.

Idle fuel trim

The percentage above or below the nominal fuel requirement for the volume of air entering at idle.

Idle fueling

Adjustment of fueling at idle to suit the actual air inducted.

Idle reference speed

The target idle speed as determined by the Electronic Control Module (ECM). (It should be the same as the actual idle speed if the motorcycle is operating correctly.)

Ignition advance

The timing of ignition at the spark plug relative to top dead centre.

Ignition switch position

The 'on' or 'off' position of either or both the ignition switch and the engine stop switch.

Ignition timing

Same as 'ignition advance'.

Injector pulse time

The time during which an injector remains open (i.e. delivering fuel).

Long term fuel trim

Fueling after adapting to the engine's long term fueling requirements (closed loop only). See also short term fuel trim.

MAP sensor

Manifold absolute pressure (the air pressure in the intake system). Measured after the throttle valves this reading is



compared to the pressure reading in the air box (barometric pressure) to allow the ECM to calculate engine load,

On Keihin bikes (eg 675), the value can be used to adjust **throttle body sync** as there is **one** sensor for each intake. Earlier Sagem'd bikes (eg 595,955) do not have individual intake sensors and require external device (eg *Carbtune*) to measure each intake.

MIL

Malfunction Indicator Lamp. Illuminates when most Diagnostic Trouble Codes (DTC's) are set.

Neutral switch status

The 'neutral' or 'in gear' status of the gearchange.

Off idle fuel trim

The percentage above or below the nominal fuel requirement for the volume of air entering at engine speeds other than idle. This function is not currently used in the Triumph system.

Open circuit

A break in an electrical circuit - current cannot flow.

Over temp

High temperature within the Electronic Control Module (ECM) caused by an internal or external failure.

Primary Throttle Position Sensor

Sensor for the primary (lower) throttle position.

Primary Throttle Stepper Motor (see also IACV)

Stepper motor used to vary throttle opening at idle and when the engine is cold. (latter bikes only)

Purge valve duty cycle

The time the purge valve is open in an open / close cycle, expressed as a percentage of the cycle time.

READ (tune)

Reading a tune or data FROM bike to PC. Bike ==> PC

Road Speed Sensor

Gearbox mounted sensor which delivers information to the ECM that is converted to the road speed value that is displayed on the speedometer.

Sensor reference voltage

Supply voltage to the system sensors (nominally 5 volts).

Short Circuit



A 'short cut' in an electrical circuit - current by-passes the intended circuit (usually to earth).

Short term fuel trim

A correction applied to the fuel mixture during closed loop catalyst operation. This, in turn has an effect on the long term fuel trim in that, if an engine constantly requires mixture correction, the long term fuel trim will adapt to this requirement thus reducing the need for constant short term adjustment.

Sidestand status

The 'up' or 'down' position of the side stand.

Target dwell time

The actual time from coil 'on' to coil 'off'.

Throttle position (TP)

The position of the throttle butterfly given as a percentage of the movement range. When the data is displayed on the tool, fully open need not be 100% nor fully closed 0%.

Read by the TPS (sensor).

Throttle voltage

Voltage at the throttle potentiometer.

Vbatt

Battery voltage.

Hope you guys have got something out of my mod book. I will keep adding to it as time goes by.

Cheers

Kevxtx





Update status

Version 1, December 2012



