Wisdom of the Forum (WOTF)

This page contains a list of un-official fixes, troubleshooting and cross references for parts from other makes and models that will work on the 950/990. It is arrainged much like it would be if, once in awhile, a bunch of seasoned Orange Crush enthusiasts from all over the World got together for pizza and beer at a pub in the middle of nowhere. Someone wrote the best pearls of wisdom discussed at these meetings on a napkin. Below are the combined "napkin" notes from many years of these get-together's. Mind the mess.

Orange = KTM Part Number

Subject Index (click to find your subject)
Or: Use the search function in your browser

Alarm System: There are two connectors near the top of the airbox on 990 Adventures. One is a small (white) two conductor plug that connects to a switch for the glovebox lid, and a larger dark brown or black 14 conductor connector that plugs into the alarm module if you have one. If the bike isn't equpped with the optional alarm, it will have a dummy plug in the big connector and the small white connector will be empty (as shown in the image below).

(Photo by AdvPax)

Front wheel drag on the Super Enduro: A number of SE owners have reported problems with severe front wheel drag. The cause turned out to be an improperly sized inner axle spacer. Take a look at the thread on Advrider.com for more detail.

Lack of an oil tank check valve in the 950 SE and SM: Due to the lower location of the dry sump oil storage tank on the Super Enduro and Supermotard, compared to the Adventure model, these two models have no oil tank check valve. The purpose of the valve in the Adventure is to keep the oil in the storage tank from gravity feeding down into the engine case and submerging the engine internals when the engine is not running. Due to the lower mounting level of the tank on the SE/SM it will only empty about 1/2 of its contents into the engine when it is not running. This results in an oil level in the crankcase of about 1/2 way up the clutch pack. This "extra" oil is easily removed by the oil suction pump within the first few minutes of operation and causes no adverse effects. One inconvenience that this does cause the mechanic servicing these engines is that the oil must be drained before the clutch outer cover is removed to service the clutch pack, or the entire contents of the oil tank will drain out onto the ground. With the Adventure, the oil need not be drained to service the clutch as very little oil is carried in the crankcase at any time, due to the check valve. One advantage of not having a check valve is that the SE/SM are not subject to it failing as has been the case with some of the early Adventure check valves.

Noisy cam chain:
shawty950: 950/990 Cam Chain Tensioners
60036003000 TIMING-CH.TENS. HYDR.(75YM) 03

uk_mouse: Brand new tensioner length = 48.8 mm

KOTH: See uk_mouse's How-to on the cam chain HERE.

Head2Wind: How this lubrication system works:
1. high pressure pump draws oil from the tank through medium grade screen.
2. output of high pressure pump has a pressure regulator that dumps back into the case, just behind the clutch basket, so anything that will not go through the filter or is not needed by the engine gets relieved at this point.
3. output of pump (in parallel to pressure regulator) goes from outside to inside of the main filter, hence the crushed pleats if filter medium is plugged.
4. passes through filter (hopefully) and into distribution system that goes to crank first, then across to the other side. Also up to the heads and this is where the pressure sensor is... (back of the front cylinder, just behind the cam chain tunnel).
5. discharged used lube oil dumps back to bottom sump of engine
6. suction stage of pump pulls oil out of sump of engine through course screen and returns oil to tank.
7. and the process starts over.....

Kamanya: I have had a noisy engine since day dot. (not to mention numerous other well documented hassles). Recently I have has some oil issues too. Twice I have been really on it for extended periods and when I stop and do an oil level check just for peace of mind my oil level has been way over full when I know that for hundreds of kilometres before it has been sitting where it should?

The clatter has been getting progressively worse and all the numerous threads on cam chains and cam chain tensioners prompted me to send the bike in for a last time to try get rid of the clatter under warranty. The noise if I try to define it sounds like cam chain clatter from both front and rear cylinders coupled with something very faint, more of a ticking up near the front cylinder head. Personally I was pretty sure that maybe the chains were stretched. The best they could do was

replace the cam chain tensioners and apparently prod and poke and give the bike back with no apparent change in noise level. The mechanic said that he had been advised to by KTM to use a heavier oil but didn't have any in the shop. He said he was advised to use Shell Helix 60 weight oil. Oil developed for older engines. To me this was a cop out as all it was going to do was mask the symptom. But what can you do?

So, off to our vacation house and yesterday I decided to go and see if I could get hold of any of the oil he was talking about a try an oil change myself. The shop had some, so back to the bike, checked the filters and changed the oil, put the left tank back on and started her up. At first it sounded much better but as the temperatures bars went from zero to 4 bars the racket got worse than before!? It really didn't sound good at all. Even my wife who knows nothing about bikes commented that it was very loud. I felt like taking it out on a ride and making it an insurance problem.

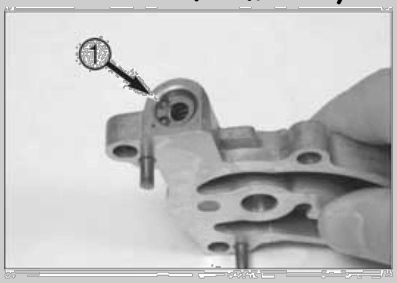
After a bit of a search on the net, looking for KTM 950 and Shell helix I came across this post; http://www.advrider.com/forums/showt...ighlight=helix

Taki had experienced exactly the same symptoms as me! This got me to thinking that I must have some sort of pump/oil problem and this problem had now been exasperated by the heavier oil. Checking through the shop manual at the section on servicing the oil pumps – which would be a bitch to get to as you have to split the cases to get to both of them – I noticed the next bit has a part on servicing the oil bypass valve.

This valves function is to keep the oil pressure with engine at operating temperature (oil temperature 100°C in oil tank) between min. 0,8 bar at 1500 rpm to min 2,4 bar - max 3,5 bar at 6000 rpm. Also the spring has some tolerances;

Bypass valve Length of spring, unloaded min. 41.5 mm
Spring tension 27 mm at a load of at least 3.5 kg

NOTE: different pistons were installed starting with engine number 2-600-00773. Engines of an earlier make must be converted; see Technical Information, Chapter 1.



Bypass valve

Remove the lock ring ❶ on the bypass valve using suitable pliers and take the individual bypass valve parts out of the housing.

NOTE: the spring is pretensioned.

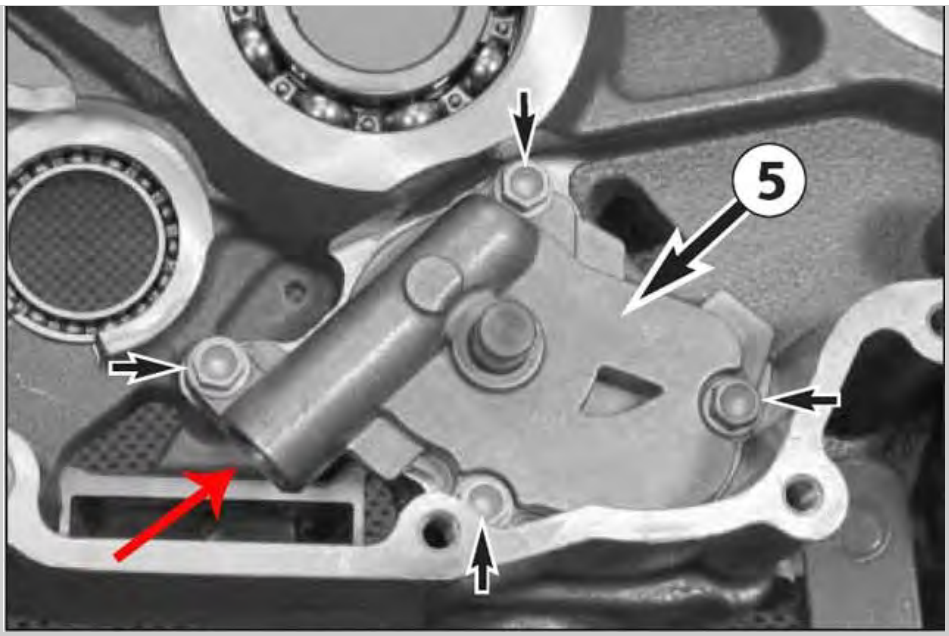
Check parts for visible wear and damage.
Measure the length of the pressure spring.

Minimum length of pressure spring: 42.0 mm

Clean parts, oil the pistons and insert in the bore. Position the spring, place a washer on the spring and mount the lock ring in the groove using suitable pliers.

NOTE: different pistons were installed starting with engine number 2-600-00773. Engines of an earlier make must be converted; see Technical Information, Chapter 1.

As I didn't take photo's, this is the manuals shot of it. The slot below to the left is where the oil screen goes and the major bearing above is where the clutch would be.



Aha! So, I phoned the mechanic told him of my findings and asked him about this valve. He knew about it and said that there was a factory order to change the piston on some of the earlier models and that it was possible to get to the spring if the clutch cover was removed. He said that as I had just filled the bike with new oil, instead of re-draining the oil that all I had to do was lay the bike on its left hand side and work from there.

It requires the front exhaust header be removed and the coolant is drained before you start. Once this is done, you don't need to take the pump impeller off to get the clutch cover off. You don't need to take the outer clutch cover off either it can stay bolted to the main clutch cover. As the bike is lying on its side getting the circlip and the washer that sits behind the spring without dropping it into the engine is almost impossible without a shop cloth stuffed under the valve and into where the oil screen sits.

Getting it out needs right angled pusher circlip pliers that can reach at least 3cm. You cant get the piston out as it won't clear the case before it is completely clear of the tube it sits in. My spring was 40.52mm. I stretched it to 47mm and put it back.

Putting it back was a mission of note mostly as there is not much space and it requires 2 more pairs of hands. All I can say is hold the pliers tight and use the circlip and a finger to push the whole story home. I buttoned everything back up filled the coolant and ran it up to 4 bars. It seemed to be great and it was a lot less noisier.

I went for short 50k ride. It is much quieter, not as quiet as some I have heard but a vast improvement on what I had before. Also the ticking has gone. But a big bonus is that it is noticeably stronger by far. My beast is back. So, it could be that the Bypass spring gets tired and this is the cause of a lot of the pressure hassles that manifest in a variety of ways from cam chain and tensioner issues to over full oil tanks. I would rate the check as a 2 on a scale of 5 as to difficulty to fix and requires the following if you lie the bike on its side;

Circlip pliers
Antifreeze
Torque wrench for the clutch cover bolts.
Shop cloth
Patience.

The Fix: Read about kamanya's final soution and the true cause of his noisey engine. Very interesting, albeit very rare.

Pyndon: I'm only repeating here what I have said before. Quite simply, in my mind, oil is oil. Use whatever make you can get your hands on but just ensure that it is the correct specification. As it happens, I have used Motorex in the bike since day one, for no other reason than I get it at a reasonable price. I always ran 10W50 until about 60,000miles and I switched to 10W60 to try and help a more warn engine at hot temperatures. I can almost assure you, from my past experience of building engined over the years that the engine would have looked exactly the same inside whatever make of oil you used, providing it as was the right specification.

In the last month I have switched all my motors to Motul as a result of a sponsorship deal and will run that until the deal comes to an end and then I'll move onto whatever I can get cheapest, well, I am a Yorkshireman. Like I said, oil is oil, brown and slippy!

Low Oil Pressure:
cpmodem: There are several things that can cause low oil pressure, including but not limited to (in no particular order of importance):

- **Clogged oil filter and/or screens.**
- **Sticking check valve in the oil return line.**
- **Tear in the oil return line.**
- **Weak bypass valve spring.**
- **Too low a viscosity of oil.**
- **Too large or missing clutch oil jet.**
- **Worn out oil.**
- **Low oil level.**
- **Also, there is a Tech Bulletin (TB0544) that applies to certain VIN's of 2005 ADV. It refers to oil jet plugs inside the engine case that can come loose and damage the crankshaft/conrods and result in loss of oil pressure. You will have to have a dealer check your bike's VIN in the KTM Dealernet. This is a rare but very serious issue that should have been done at the first service and is not likely to be your problem, but all 2005 owners should be aware of it, IMNSHO.**
- **Other things like worn bearings and oil pump are unlikely to be issues unless the bike has excessive miles and/or has been abused (ie: run without an oil filter, etc.).**

I suggest checking oil pressure with a gauge, rather than trusting the "idiot light."

Ignition Rotor:
KOTH: It has come to my attention that some folks are doing the Ignition Rotor Tech Bulletin and not using the proper locking compound on the bolt threads. Loctite "Blue" is not the proper product for the Freewheel to ignition rotor bolts (6). That is a thread locking product designed for use on fittings that are meant to be removed fairly easily with "normal" hand tools. The freewheel to rotor bolt threads and their mating threads in the rotor must be thoroughly degreased, and Loctite 648 "Green" applied. 648 is a Cylindrical Part Bonding Compound for parts that are meant to NOT be removed. This is the product specified in the KTM Tech Bulletin of 10-14-2004 (0410/39/01-E). Anything less and you "may" have problems in the future. Here is a link to a good source for Loctite 648, in case you're having trouble finding it: http://www.greenskyadventures.com/loctite/loctiteCart.htm They are even sometimes out of the

product, so stock up when they have it.
Also, if you remove the freewheel from the rotor for any reason, please take care to not reverse it. The result is that the starter motor will spin, and spin, and spin (whuuuurrrrrrrrr) ... but it will not engage the engine. 'Nuff said.

Oh, one other thing. If for some reason you didn't do the above Tech Bulletin, or it was done improperly (ie: using the wrong Locktite product), there is an option to replacing the resulting damaged/destroyed stator with a new part. Checkout Sakurama's article on rewinding his damaged stator.

Drive Chain Slack:
cpmodem: Due to the differences in suspension travel of the different years and models, the amount of slack when on the centerstand will vary. IOW, to get the right adjustment, each bike must be measured using the "wheel spindle, swing-arm bearing bolt and the front chain-sprocket centerline" method.

Ask two of your biggest friends to sit on the bike and compress the rear suspension to the point where the wheel spindle, swing-arm bearing bolt and the front chain-sprocket centerline are all in line. That is the point of maximum chain tension. Or you can compress the bike's rear end with a ratcheting tie down. Free up and down movement at the middle of the chain's bottom run should be about half an inch (13 mm) with the suspension compressed.

Then put your bike up on the centerstand, or sidestand if you don't have a centerstand, and measure the slack at the midpoint in the chain with reference to the swingarm. Write this measurement down, then you can easily check your chain without your friends in the future. Many folks use something they will always have with them for reference, like fingers, hand, tool, block of wood, etc. so they can make quick checks without digging out the tape measure.

Valve Shims:
kamanya: Download this Excel file: Valve Shim Calculator

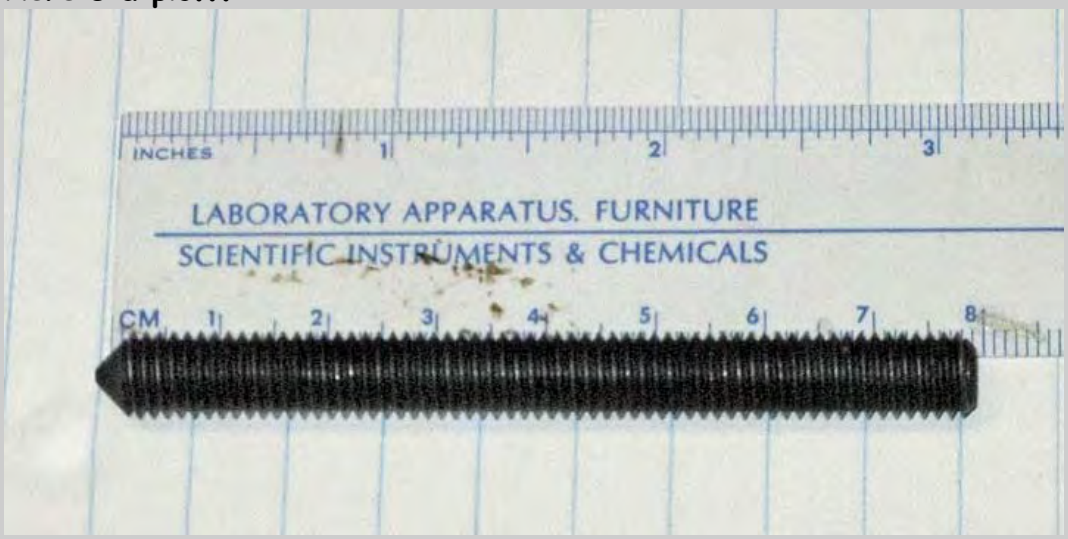
paochow: Here are the part numbers for the HD shims (ed:10mm which fit the LC8 engine) for the common sizes...

Part#	Shim size (mm)
18624-01K	2.025
18625-01K	2.075
18626-01K	2.125
18627-1K	2.175
18670-01K	2.2
18628-01K	2.225
18671-01K	2.25
18629-01K	2.275
18672-01K	2.3
18630-01K	2.325
18673-01K	2.35
18631-01K	2.375
18674-01K	2.4
18632-01K	2.425
18675-01K	2.45
18638-01K	2.475

18676-01K	2.5
18639-01K	2.525
18677-01K	2.55
18655-01K	2.575
18678-01K	2.6
18656-01K	2.625
18679-01K	2.65
18657-01K	2.675
18680-01K	2.7
18658-01K	2.725
18681-01K	2.75
18659-01K	2.775
18682-01K	2.8
18692-01K	2.825
18683-01K	2.85
18693-01K	2.875
18684-01K	2.9
18694-01K	2.925
18685-01K	2.95
18695-01K	2.975
18686-01K	3

emelgee: Aprillia also use the same size shims in their V-twins, and they do the half intervals as well.
If you're doing yours for the first time then it's a good idea to pop the cams out and note down the shim sizes, even if they're within spec.
Next time round just order a set 1 size down from the current sizes before you start work so you've got them on hand to swap if needed. The clearances usually get smaller as things bed in, so you're unlikely to need larger shims than the ones in there already.

Engine locking bolt:
Vintage Thumper: If you want the official bolt, it's 0113080802. If you want to make your own, it's 8mm x 80mm x 1.25mm thread pitch. As Tim said, it has about a 30 degree point on one end, and is machined for a hex key in the other. But I'm sure a regular screwdriver slot would work too. Here's a pic...



Speedo Re calibration:

jaydee1445: If you change the wheel size on the speedo to 19 in. the speedo will be dead on. Change the mode to the fuel warning countdown page, then push and hold both the set and mode buttons for 10 seconds. When the wheel size comes up change it with the mode button to 19 then press set. Your odometer will be slightly off on the low side but the speed will be right on.

Jump Starting/Charging:

cpmodem: After mounting crash guards, some folks have found it time consuming to get to the battery terminals on their 950's. The 990's have a handy place to connect a charger to on the right side beneath the plastic cover above the skid plate. These parts can be added to 950's to give them the same convenience.
Here's a parts list (you might get by with less, butt this will do the full convert) Prices as of 11/2007:

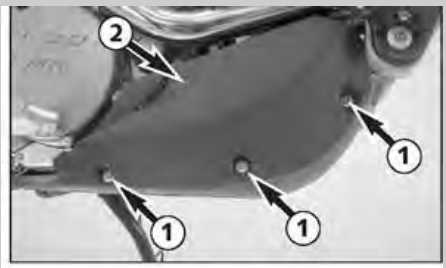
60111059000 BATTERY CABLE 250MM 06 6.50 $6.50
60111097000 GROUND CABLE 100MM06 6.50 $6.50
60111056000 BRACKET STARTER RELAY 06 18.50 $18.50
60111048000 POSITIVE POL EXTENSION06 7.00 $7.00
60111048020 HEXAGON NUT M6 SW=13 L=20 4.50 $4.50
60111048035 COVER CAP OUTER 06 4.50 $4.50

Total: $47.50

AntWare: You can start the bike by jumping across the starter relay on the lower right side, and thus bypassing the ignition and solenoid.

Take off the right plastic engine guard, use the plastic handled screwdriver in the toolkit to jump across the two bolts just above the #3 in the bottom picture.

Make sure the bike is in nuetral, and don't hold the screwdriver on there too long
Good luck



Battery Problems:

Head2Wind: Disconnect the positive lead and then put an amp meter in line. preferable to use a digital meter. cheap to pick up if you don't have one. with everything turned off there should be no current showing. disconnect the previous configuration, turn meter to DC volts and check the battery voltage, should be near 12.7 vdc or so. if it is not, charge for about 12 hours, check voltage right

after you take it off the charger, then about one hour after that. let it sit for a week or so disconnected as described and then check the battery voltage again. if it has dropped significantly then the battery that you just purchase is also toast. if it is low voltage I would connect the battery back to the bike, attempt to start it (if not enough, then charge it) then check the running voltage (charge voltage). it should be 13.5-14.7, if it is 15 vdc or greater then then the regulator is not functioning correctly. if it is NOT 12.5 or better then either the regulator/rectifier is not working correctly or the stator/alternator is on the fritz.

The only thing that I have ever found to be a load while "turned off" was a regulator/rectifier that was faulty. granted this was not a KTM (it was a mid 80s Yamaha-typical poor electronics of the day)

Hair: The Yuasa YTZ14S MF was built for a Honda product. Since that time the battery as been OEM specked on other bikes. This battery is only built in Japan. Yuasausa keeps a small inventory on hand. They don't want to stock to many of them. Because they want to keep the battery fresh. The battery is shipped from Japan fully charged. If the battery is not cycled that is it is left to sit on the shelf or in your bike. sulphate crystals build up on a plate. They well eventfully short out a plate. If you battery is changed it will take and hold a charge. But it no longer has the ability to produce a current. One of the problems that Yuasa has is that distributors and or sellers of this battery leave them on the shelf for to long.

KOTH: Check out the chart below as a handy guide to battery condition. Take readings at the battery terminals. Be sure to let the battery set for >2hrs before taking measurements. Note, our 950/990's OEM Yuasa is a "Sealed VRLA".

Battery Voltage Reading Using a Voltmeter

State of Charge	Sealed VRLA	CX & YuMicron	Conventional
100%	13.0v	12.7v	12.6v
75%	12.8v	12.5v	12.4v
50%	12.5v	12.2v	12.1v
25%	12.2v	12.0v	11.9v
0%	12.0v or less	11.9v or less	11.8v or less

Also, be aware that ambient temperatures over 130 deg F (54 Deg C) quickly kill lead acid batteries.

Here are links to some excellent info on batteries:
YUASA Battery Technical Manual
Also check out:
Battery FAQ
Another Battery FAQ

Finally, Understanding Electricity

OEM 950/990 AGM Battery

cyborg: Lightweight Lithium Ion Phosphate 950/990 replacement battery:
Here: http://www.shoraipower.com/p-157-lfx18l1-bs12.aspx
AdvRider Forum Post: Shorai battery for KTM 950/990

KOTH: Here is a chart of several replacement batteries compared to the OEM:

** NOTE ** The Braille Battery has had several Bad reviews from Inmates

Model	Type	Activation	Length	Width	Height	CCA*	Weight	A/H
Yuasa (OEM) YTZ14S	AGM-VRLA	Factory	6.00"	3.44"	4.38"	230	8.6 lbs	11.2
Interstate FAYTZ14S	AGM-VRLA	Factory	6.00"	3.44"	4.38"	230	8.6 lbs	11.2
Powersports WPZ14S	AGM-VRLA	Factory	6.00"	3.43"	4.38"	250	8.6 lbs	11.2
Koyo YTZ14S	AGM-VRLA	Factory	6.00"	3.44"	4.38"	230	8.6 lbs	11.2
Shorai LFX18A1-BS12	LiFePO4 Prismatic	Factory	5.8"	2.6"	4.2"	270*	2.2 lbs	18.0
Antigravity 6900	LiFePO4 Cylindric	Factory	4.25"	2.75"	3.75"	360*	2.4 lbs	6.9**

* Note: LiFePo4 batteries have noticeably reduced current flow at sub freezing temperatures. Therefore, the CCA specs stated above are not realized until the battery has warmed itself up. The manufacturer suggests turning on the ignition and lights for 4-5 minutes before starting at or below 0 deg F.
** Note: Cylindric design LiFePo4 Batteries have lower amp/hours ratings than the other batteries in this table. Therefore "may" not be suitable for use where loads sometimes exceed alternator output more than for a few minutes at a time, or where there is a discharge on the battery when the engine is not running.

What is the CCA rating?

The cold cranking ampere (CCA) rating refers to the number of amperes a battery can deliver for 30 seconds at a temperature of -18°C (0°F) before the voltage drops to 1.20 volts per cell, or 7.20 volts for a 12V battery.
A 12V battery that has a rating of 550 CCA means that the battery will provide 550 amps for 30 seconds at -18°C (0°F) before the voltage falls to 7.20V.

For an ongoing discussion of alternate batteries go to this thread on ADVRider.com:
Battery Alternative

cholla: For the longest time I couldn't figure out what was draining my battery. When camping at high elevations, after a cold night, I'd wake up to a dead battery. Well recently I was doing a valve adjustment in the garage on a cold morning. When I went to pull the carbs, they were warm. It took a few minutes to put 2 and 2 together. The carb heaters were wired to my #1 accessory outlet, which is always hot / on. I just pulled the Acc #1 fuse as a temporary fix till I could address it. I rewired them to my #2 accessory outlet. Now my battery is holding it's own.

trailtrick: Clock. Some speedo gauges have a bad resistor for the clock and they drag quite o be o power.
I find this keeping a customer bike here for 2 weeks every 2-3 days the battery was dead,swap battery same all that after check it twice for hours .
disconect the speedo for a weekend and no issue , rode it and keep it disconect for 3 weeks and no issue we replace the unit and no more problems since theme ,9 months now

Brakes:
Kawidad: Or the front brakes are the same as the F650, using the same pads.

HellsAlien: On pulsing brakes... The pulsing is due to a warped disk or bent mounting tabs on the hub. It only takes a couple thousanths of outness for this to become noticable. Yes, this happened to me and I went thru 2 sets of disks & a bunch of hassle to get it right.

Get ahold of a dial indicator and adjustable base if you can, and check for axial runout of the brake disks and of the mounting tabs on the hub. Make a jig plate from a piece of strap steel, say 1 X 1/8 X 4, with a hole that will mount to one of the axle pinch bolts. Use this for the dial mag base. Remove the calipers for this test. I can talk you thru the minutae of doing this test so you get good results, the devil is in the metrology details!

Axial runout is the deviation from flat plane in the direction of the axle.
This needs to be less than .001" on the hub tabs, and typically less than .002 on the disk. Measure at disk ID, midspan and near OD.

Find the low points, note as 0 on the disk with a Sharpie, then proceed around noting as +1, +2 in thousanths. Hopefully, you will find a warped point in the disk. A pulse is typical of a warp in a local section of the disk that is comparable in span to the brake pad; hence the pad cannot accomodate the outness over such a short span and it pulses back a the caliper as torque ripple on the brake and pulsing at the lever.

Demount the disks and do similar to the hub mounting tabs. You need to know if its just the disks or the hub too. Hopefully they will all be "0", but if not, then the wheel/hub needs to go to Woodys (or similar) for machine work. They can machine the hub tabs on assembled wheel, and they have done it before, a few times. I did this last month and it solved my problem.

mcmann: If you warp a stock rotor, or need a second set for a 19" front wheel, the 990S floating rotors work great and cost less. I just received my set of Part# 60109060000 300mm floaters from cheapcycleparts.com ($122.91 ea).
They also fit the 950SE.
I had a slightly warped stock rotor (stock pads are too hard). I was getting some pulsing.
I added Galfer green brake pads to the front and black Galfer pads to the back (no more squealing).
I think I abused the front stock rotors because of the shrieking rear OEM pads - - - used too much front braking.
Feels very smooth with great stopping power.

KOTH: The rear floater from the 990 will also retrofit to all 950's. Said to be a cure for the well documented "rear brake howl." PN 60110060000

KOTH: There was a Tech Bulletin Recall on the rear master cylinder that addressed poor rear brake performance.

Hydrolock:

WOTF: It doesn't take much liquid in the cylinder to hydolock it. Slightly more than 40cc (1.4 oz) is all that's required to cause the big twin to lock up. To clear a hydrolock: put bike in 6th gear and rock backwards. Fuel/water will be pushed out the opening valves. If you've thoroughly submarined your beloved, you may have to raise the front end high enough so any water in the exhaust system can run out. You should do this both before and after clearing the cylinders. Be sure to change the oil and filter ASAP due to the fuel/water leaking past the rings and contaminating the oil. The filter will swell closed and shut off oil to the bearings, etc. The air filter may have to be replaced eventually for the engine to run properly (depending on how wet it got), but you should be able to get back to camp by shaking out as much water as you can and re-installing.

Engine Firing Order:

KOTH: The LC8 engine's piston rods ride on a common crank journal. The cylinders are positioned 75 degrees apart, with cyl #1 being the front cylinder. The engine runs in a ccw direction (observed from ignition rotor side) and fires as follows:

1. Slightly before (depending on the ignition advance) TDC on the compression stroke cyl #1 fires.
2. 285 degrees of crankshaft rotation later cyl #2 fires (during cyl #1's exhaust stroke).
3. 435 degrees of crankshaft rotation later cyl #1 fires During cyl #2's intake stroke), and the cycle starts again.

Note: The coils actually fire the spark plugs each time the piston comes to TDC, but the engine only fires when there is a compressed fuel/air mixture (ie: every other upstroke of the piston.

Cam Specs:

.040" VALVE LIFT

	CAM LIFT (in)	LOBE CENTER	DURATION	OPEN	CLOSE	OVERLAP
STOCK KTM 990 ADVENTURE 2007/8						

INTAKE	0.354	103 ATDC	224	9 BTDC	35 ABDC	
EXHAUST	0.354	101 BTDC	223	32 BBDC	11 ATDC	20
STOCK KTM 950 All						
INTAKE	0.386	110 ATDC	231	5 BTDC	46 ABDC	
EXHAUST	0.335	109 BTDC	230	44 BBDC	6 ATDC	11

Thanks to BillyD.

LC8 Camshaft Part Numbers (EU/UK/AU models are generally 1 year earlier than USA):

950 All Years ADV, SE, SM
600 36 010 144 CAMSHAFT EXHAUST FRONT (superseded by 600 36 010 200)
600 36 009 144 CAMSHAFT INTAKE FRONT
600 36 109 144 CAMSHAFT INTAKE FRONT
600 36 110 144 CAMSHAFT EXHAUST FRONT

990 2005 Super Duke*
610 36 010 044 CAMSHAFT EXHAUST FRONT
610 36 009 044 CAMSHAFT INTAKE FRONT
610 36 109 044 CAMSHAFT INTAKE REAR
610 36 110 044 CAMSHAFT EXHAUST REAR (superseded by 610 36 110 100)

990 2006 Super Duke*
610 36 010 144 CAMSHAFT EXHAUST FRONT
610 36 009 144 CAMSHAFT INTAKE FRONT
610 36 109 144 CAMSHAFT INTAKE REAR
610 36 110 144 CAMSHAFT EXHAUST REAR

990 2007-2008 ADV
601 36 010 000 CAMSHAFT EXHAUST FRONT
601 36 009 000 CAMSHAFT INTAKE FRONT
601 36 109 000 CAMSHAFT INTAKE REAR
601 36 110 000 CAMSHAFT EXHAUST REAR

990 2009-11 ADV,SMT-R, 2007-11 Super Duke**
611 36 010 000 CAMSHAFT EXHAUST FRONT
611 36 009 000 CAMSHAFT INTAKE FRONT
611 36 109 000 CAMSHAFT INTAKE REAR
611 36 110 000 CAMSHAFT EXHAUST REAR

* Not imported into the USA
** 2009-2011 not imported into the USA

Installing LC8 Cams:
cpmodem: If everything gets FUBAR due to some SNAFU, and the cams all get removed together for some reason. The cams' positions are marked on their ends. Use something like a chopstick, dowel or new pencil in the open sparkplug holes to help you see when the pistons are at Top Dead Center (TDC). You can then poke a pointed object in the locking hole and "feel" for the TDC indentation in the crankshaft as you rotate the crankshaft CCW and watch the chopstick rise in the sparkplug hole. Then thread the crank lock tool in to hold it at TDC while you install the cams for that cylinder. Remember the sparkplugs fire everytime the piston approaches TDC, so the crankshaft has no idea whether it is on TDC on the Compression soroke or TDC on the exhaust stroke. The cams are sole determinants of that. Below is a Step-By-Step of the proceedure.

- Bring front piston to TDC and lock the crank with the crank lock tool.
- Set front Exhaust cam (EX FR) in frontmost cam journal with "dot" lined up with edge of the gasket surface.
- Set front Intake cam (IN FR) in the cam journal next to it with "dot" lined up with edge of the gasket surface.
- Install cam bridge on front cams and torque to spec.
- Check valve clearances with feeler gauge.
- Remove crank lock tool.
- Rotate engine CCW (as seen from left side of bike) 285 degrees until the rear cylinder comes to TDC and lock crank.
- Set rear Exhaust cam (EX RE) in the rearmost cam journal with the "cross" lined up with the edge of the gasket surface.
- Set rear Intake cam (IN RE) in the remaining journal with the "cross" lined up with the gasket surface.
- Check valve clearances with feeler gauge.
- Remove crank lock tool.
- Rotate through full 720 degrees by hand to make sure nothing hits before firing up.

This proceedure is covered in detail with photos in the Valve Adjustment article elsewhere in the HOW.

Alternate Sparkplug Tool:
Krust: If they left the wrench out of your tool kit like they did mine, and you would like to find a wrench that works, but not pay the $70 KTM wants for a new one. You can buy a Yamaha wrench for $14 that works great. No additional tools required. You can use the 14mm open end wrench already in the KTM kit (assuming they didn't forget that one in your kit as well).

P/N: 5TA-2814F-00-00

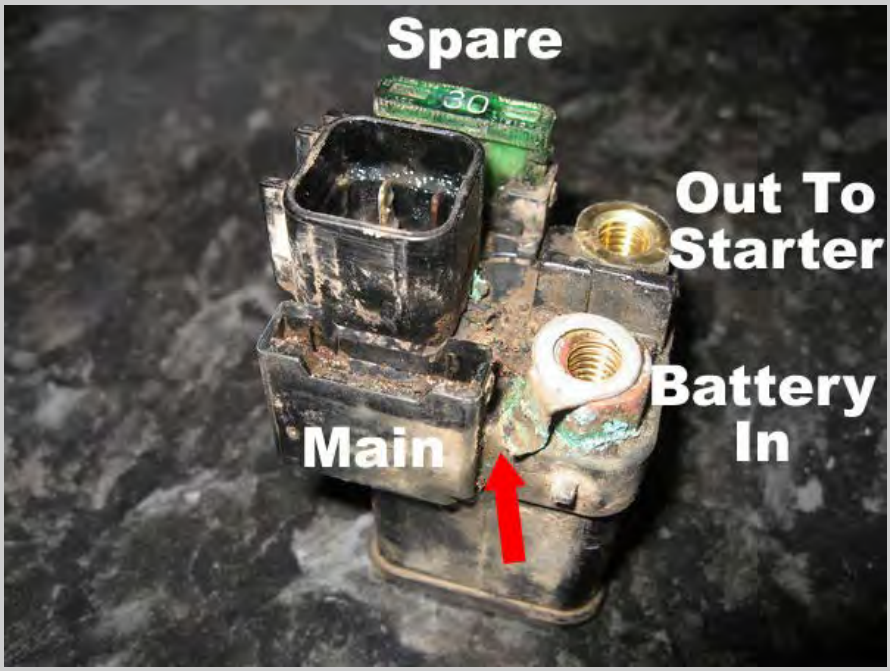
Poor running, stalling, missing, cutting out:

rumpus: Intermittent cutting out.This happened to me this summer, and I'll bet you a beer you've got the same problem I had. The contacts in the ignition switch (which attaches to the bottom of the ignition lock on the handlebar) become loose over time, causing and intermittent fault.
I spent about 5 weeks trying to diagnose this problem on my 950, and I tested damn near every electrical part and connector on the bike before finding the source of the malfunction. My solution was to remove the switch from the bike (it unscrews from the bottom of the ignition lock), CAREFULLY and PATIENTLY disassemble the ignition switch, and gingerly stretch the springs which push the electrical contacts together. This operation requires a little delicate persuasion of press-fit parts, but it'll all go back together just fine if you're careful and take your time. The switch isn't really designed to be serviced in this way, but I've had mine back together for four months now and the problem has never resurfaced.
You can also buy the switch from KTM, but it comes as a kit with the lock and key and costs too damn much. The good new is, if you DO buy a new switch kit, you can install only the switch itself without the new lock and not have to use a new ignition key.

KOTH: osteo did much the same thing as above with photos. At this link elsewhere in the HOW.

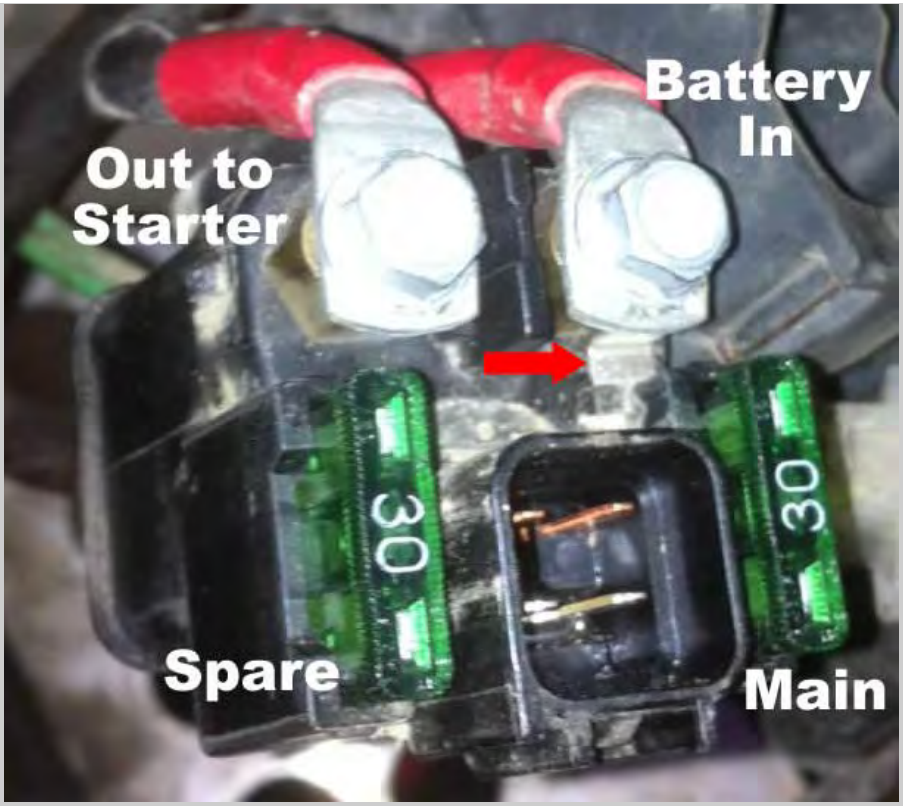
Pyndon: Had a persistant ignition cutout for over 10k miles. Finally found the problem. Check out full post.

Main relay. Corroded conductor (red arrow). It should provide battery power to the adjacent fuse holder.



(Image by Pyndon)

KOTH: Below is an image of a good Main Relay (58211058000):
The red arrow in this image points out the questionable conductor as it should look in an undamaged condition.

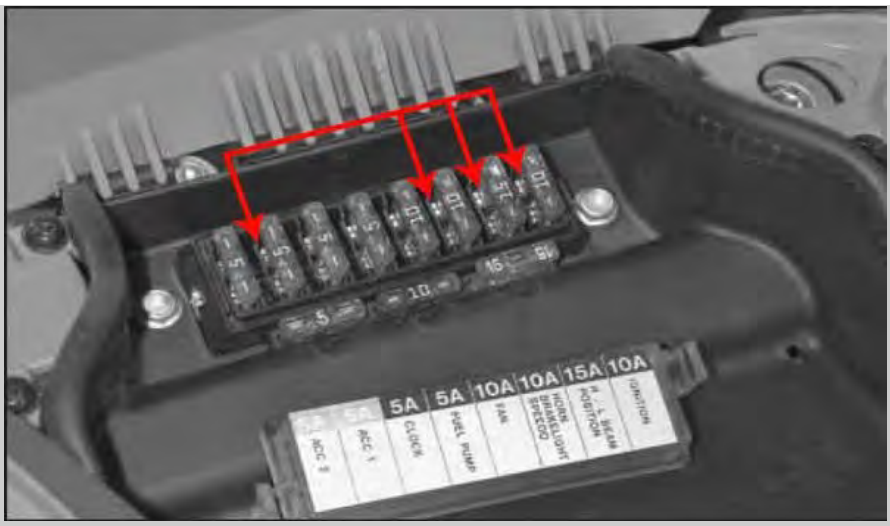


(Image by bcbiker)

WOTF: Loose (not fully seated) ignition coil(s) can cause poor running (feels like it's running on one cylinder part of the time).

WOTF: Loose or broken connections at the battery terminals have been found to cause driveability problems. This should be one of the first checks in any case of poor running as it is easy and costs nothing.

cpmodem: In the case of a broken ignition switch, lost key, or broken switch wires, it is fairly simple to "hotwire" the 950 Adventure (2003-2006). In the fuse box inside the glove box, simply jumper the Acc1 fuse to the Ignition, Headlights, and Instruments fuses (right three). Make up the jumper ahead of time and keep it on the bike for emergencies. Use a minimum of 2mm (14 AWG) insulated wire for your jumper. Be sure to connect the right three first. Leave the fuses in place and your circuits will be protected as usual. There is no additional load on any wiring as the jumper simply replaces the ignition switch in the circuit. The branch circuits remain un-altered. Jumpering to the other side (bottom side) will leave the circuits unprotected and may cause smoke to escape from the wires.



KOTH: Improper venting of the carbs can also cause poor running (usually a hesitation/miss/surge in the midrange). ie: surging in 6th gear at ~70-75 mph. Refer to Canisterectomy for proper venting. We've even had an Inmate with a 950 that wouldn't pull 6th beyond 4k RPM. "Fell flat on its face." The problem was carb vents that were terminated inside the airbox (a definite NO-NO). We've seen more problems with improper carb venting than anything else. Seems folks just can't get their heads around the fact that simple is best. K.I.S.S.

KOTH: Vacuum leaks. Check the seal between the carbs and the intake manifold. Several folks have reported torn carb to manifold boots causing popping back through the carbs. Use the following procedure to install the carbs properly so as to avoid tearing or otherwise damaging the boots:

- **Insure the rubber grommets are in place in the bottom of the airbox, then insert the airbox over the intake manifolds.**
- **There are rubber tabs molded into the carb to manifold boots that align the clamps so that they face the right way to be tightened/loosened through the access panels. Insure the clamps are engaging the tabs.**
- **Install the carb to manifold boots on the intake manifolds and snug up the manifold clamps.**
- **Many folks don't loosen the carb side clamps enough. There is a lip on the carbs that has to fit past the clamps.**
- **Seating the rear carb first then the front seems to be the smoothest.**
- **Nothing should have to be forced. Some have sprayed a little silicone into the rubber boot to help the carbs slide in smoother, but if the clamps are loose enough the carbs will pop in with very little effort without lubrication.**
- **Watch the boots as you press down on the carbs and make sure that an edge doesn't get folded under. That is what tears them.**
- **Don't over tighten the clamps. Snug enough so that the clamps resist rotating when gently pushed is all that's needed.**

Also, check all vacuum lines for splits. Especially if you've had someone else do the canisterectomy, and they didn't follow proper proceedure and plug the un-used vacuum ports in the intake manifolds with threaded screws (m6x10, 1.0 pitch allen drive screws) and blue locktite. Symptoms are poor idle (irratic, dying, varying) and popping during closed throttle deceleration.

KOTH: If your bike idles fine at 1400 rpm when cold but stalls at the same rpm when warmed up, the idle circuit is too rich. Check the Idle Air Mixture Control Screws; they may be turned out too

far. Standard setting is 2 to 2.5 turns out from "lightly" seated. If you've changed any jets, especially the idle or air jets, you will have a different setting. If they haven't been adjusted, and the stalling started suddenly, check for blocked air jets. They are in the top of the carb under the air horn. The front one sometimes gets plugged with oil from the crank vent.

KOTH: For more on the subject of jetting this thread has just about everything you need: H2W Jetting Matrix

WOTF: A pinched wiring harness in the steering stem area has been known to cause intermittent electrical power failure. This usually manifests itself when the handlebars are turned fully one direction or the other, but not always. Usually the only way to troubleshoot this is to remove the protective wrap from the wire bundle and use a vom meter to buzzout each power wire from end to end working your way toward the steering head. It usually turns out to be a broken wire hidden beneath its own insulation.

Nillbymouth: I've read all the previous posts on electrical failures with great interest because they all seem to describe my problem but none have yet come up with a solution for me. Until now I've had the familiar engine cuts out, dash goes blank for a short time and then without me doing anything it all springs back to life and doesn't repeat for several days.

So far I've:
Cleaned out the ignition switch contacts.
Checked battery terminals.
Checked 30A fuse and all contacts.
Checked ground cable attached to engine near 30A fuse.
All seem perfectly good.

Then yesterday it cut out while on a fast straight bit of road so I turned the ignition off and on and that seemed to cure it so I thought it MUST be the ignition switch.

Today something new started to happen - when the indicators are on they intermittently flash quickly but at least this seems to be happening all the time. This is yet another symptom that others have experienced.

FIXED! Turned out to be a break in a wire in the loom somewhere around the headstock. I'm not sure which wire.

mototroy: Just got a my new '07 SE 2 weeks ago. Got to take it out around town yesterday after work for second time. Made it about 10 miles and ran into problems. The dash goes completely blank and the engine dies while riding along. Doesn't seem to care what speed or load. Just goes dead. I just turn the key off and back on, hit the starter and she fires right back up without a hiccup. Sometimes it would die within 50 feet after taking off or it would last 2 or 3 miles without issue. But everytime it's a dead dash/engine.

Fixed! ...one last repeat check turned up a poor termination of a wire/connector. The wire belonged to the small harness coming from the on/off/start-button component on right side. That harness plugged in to main chassis harness under the headlight mask. It was at this junction that a short jumper wire had a bad termination. Mr. Z said he tug personnally tugged on that exact wire the first two go- throughs, but it was the third-times-a-charm time that someone else tugged. Harder he guesses. Anyway the wire pulled out of the connector block but the bullet stayed. After removing the bullet, you could see it was crimped but not on any wire. The wire was barely stripped if any at all. Contact was just butted abd was good until I started riding it and vibration took over. This was

surley a factory goof. But after a new termination, everything checked out sano!!

KOTH: Note on the above problem and its fix: I find only one "bullet" connector behind the headlight mask that has anything to do with the engine ignition. It is BA/BF and it supplies the ground for the "emergency on/off switch." If the connector was not crimped properly as the above description states, the emergency on/off switch would not function, but the engine would continue to run. So, the mechs must have fixed something else in this area. Possibly, more likely, a short that activated the kill switch relay. Also note that this circuit is only found on the SE.

Robin Webster: I have an 05 950 Adv and hope you can point me in the right direction. When on rides the electricity supply cuts and the bike is a dead one! Sometimes waiting will allow it to restart sometimes not. Off and on with the ignition switch sometimes works sometimes not. The battery is recharged for a week and away it goes for a short time them it happens again. I went on a ride and was 65 miles in on Saturday when the Tacho went crazy and the speedo told me I was doing 150mph! The bike slowly ground to a halt and I had a push to the nearest dealer. He put on a new battery and nothing when we switched on. Recharged my battery, which was strong when tested, and still blank when switched on. No clicks or wurrs, no lights or display.

Fixed: Looks like it was the Starter Relay - put new one on at £32 and away it goes. I have forded a few streams and got it caked in mud from time to time so it's corroded and shorted out. Only been around the block on it, but looks like it's sorted.

KOTH: CorrosionX is your friend. I use this shit on everything. So do offshore oil rig workers and commercial fishermen. I found out about it on a trip to Alaska.

KOTH: Another fairly rare issue that has come up on occasion is causing poor running. QA at Mattighofen has let a few fuel tanks get installed on bikes without proper cleaning of the interior. It seems that there is a white powdery residue left in the tanks during the manufacturing process. The owner will notice the engine cuts out and runs rough. There will be a white powdery residue down inside the throat of the carbs. This is a warranty issue, and KTM has covered the necessary work in the past. The fix is to remove the tanks and flush thoroughly with a nonflammable solvent until all residue is removed from the tanks. Then the carbs need to be cleaned thoroughly. A product like Surfoam has worked for some, but removal and disassembly of the carbs may be necessary.

Antware: The crankcase vent dumps into the throat of the forward carb. If the oil tank was overfilled at the pre-delivery or at the 600 mile service the front cylinder is getting oil dumped into it causing it to feel as though it is running on one cylinder and possibly smoking out of the right pipe.

HappyGoLucky: Start her up and she runs a little rough. Give her a little throttle (she's still cold) and backfiring starts ugly. - and I mean ugly. Let her warm up on full choke (which takes away backfiring) and give her a blip on the throttle. Hardly any backfire. Do the same without choke - serious and constant backfire, I can see sparks coming up through rear carb. Stick choke back on, and rev it, and backfiring seems to stop.

SUCCESS!

- I removed all the jets - every single last one of them, all at once
- I blew compressed air through every single orifice (except my own) in the carbs

- I removed floats and reset them (rear float was set lean)
- I ran a toothbrush bristle through every single jet
- I removed the ACV diaphragm and gave them a clean (though they were fine, but getting rumpled from the carb cleaner)
- I oiled the choke (enrichement) cable - the rear one was moving fine, but rusty
(KOTH: Most likely a clogged Pilot jet circuit. Install a good fuel filter inline folks.)

WOTF: Fuel from the carbs or water from deep water crossings can swell the paper filter element also, which chokes off the air flow to the carbs and causes rich running (ie: bogging, dying at idle, poor performance, unable to get to redline).

KOTH: Note: The sidestand switch can also cause intermittent cutouts and stalls (see below).

Pyndon: Popping during overrun (decel in gear). Carb sync was way out. Read the post on ADV.

Zuber: Surging and TPS fOR 950 CARBS - The Throttle Position Sensor, TPS, sets the ignition advance. The ignition set the advance based on Engine RPM and Throttle Position. This is called a 3D Map, 1. RPM, 2. TPS, 3. Ign Advance.

When you turn on the ignition, the small computer in the ignition looks for a 'referance voltage' to determine if the TPS is in range. The voltage should be 0.5-0.6 volts when the throttle is shut. You should always have the throttle shut when turning on the ignition.

This referance voltage is set at the factory at engine idle. BUT, if the idle is turned down during the break-in period, then the referance voltage may be wrong! You may need to reset the TPS after the engine loosens up and the idle position is different. I've seen several 2006 950 Adventures with a too low voltage of 0.38 v. These had a bad surge around 3000 rpm. Reseting the TPS usually fixed it without re-jetting.

If the ignition doesn't see this voltage during start up, it may not set the advance correctly and you'll get a surge between 2000-3800 rpm. This acts just like a lean carb condition. It can be masked by richening up the carb low speed mixture screws or low speed jets, but you'll get poor mileage and a weak low rpm throttle response. If the TPS is dirty or worn, you can get the same erattic behavior.

The workshop manuals show how to set this. I'd recomend to try a resultant voltage very close to, but below 0.6 v. Check it several times by turning off the ignition and make sure you still have the same voltage when you turn it back on. Make sure it tracks voltage smoothly as you open/close the throttle. Any jumps, dead spots or other flaky action means you need a new TPS.

cpmodem: The Throttle Position Sensor (TPS) on the carbureted 950 provides the ECU with the information it needs to advance the ignition timing at idle and small throttle openings (when the engine is receiving a lean fuel air mixture). At idle, the mixture is diluted by exhaust gases due to valve overlap, resulting in a lean mixture. A lean state also exists at steady speeds with low throttle openings, such as level highway cruising. A lean mixture burns more slowly, thus requiring more advanced ignition timing in order for the combustion cycle to reach maximum cylinder pressure just after top dead center. This results in the best efficiency and lowest exhaust gas temperatures. When the throttle is suddenly opened fully, the mixture enriches. Since rich mixtures burn faster than lean ones, they require less advanced ignition timing (compared to lean ones) to get the same maximum pressure and efficiency.

With throttle position information from the TPS, and rpm info from the Pulse Generator, the ECU

determines how much spark advance is needed to be added to the internal ignition map for peak efficiency. If the throttle is suddenly opened fully, the computer uses the built in map (which is based solely on rpm) and removes the extra timing advance. As rpms climb, advance increases based on one of 2 maps available (95 ROZ and 80 ROZ). At cruising speeds with small throttle openings, the ECU uses the TPS info to determine how much extra advance the engine needs for peak efficiency.

If the TPS is out of calibration, the resulting ignition advance will be unsuitable for the conditions. The result will either be too much advance for the load, which can lead to preignition and engine damage. Or to little advance for the load which can result in inefficient combustion and high exhaust temperatures.

If the TPS is disconnected, the ECU discovers this upon start up and defaults to one of the two internal maps above. The result is less than optimal ignition under idle and low load conditions. WFO throttle acceleration will be unchanged. Just idle and low load (ie steady state cruising) conditions will be effected. Resulting in rough idle and poor throttle response at small throttle openings and decreased mileage and higher exhaust temps during steady state cruise situations.

KOTH:
Checking the throttle sensor (950 carbed engines only. Injected engines must be checked with the KTM diagnostic tool or TuneECU):

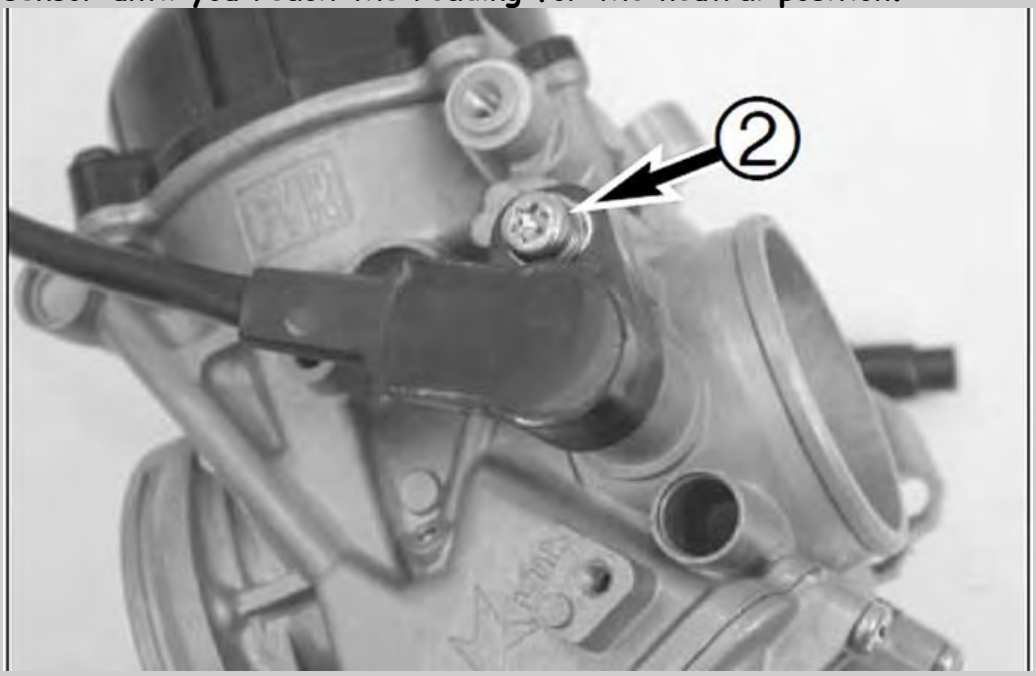
NOTE: The adjustment must be made in a mounted condition with the cable connected and the ignition switched on but engine not running. Pull the fuse for the headlights to keep from discharging the battery too much.
- Use a digital multimeter to measure the voltage between the black and yellow cables at the connector AM 1 (under the fuse box).

! CAUTION !
SINCE YOU MUST MEASURE WITH THE CONNECTOR ATTACHED, MAKE SURE TO CAREFULLY PUSH THE MEASURING TIPS ON THE MULTIMETER THROUGH THE SEALING FROM THE CABLE SIDE AND NOT TO DAMAGE ANY PART OF THE CONNECTOR.
- Reading with closed throttle (neutral position): 0.5 – 0.6 volts
- Slowly open the throttle valve with the throttle grip. The measured voltage should increase uniformly up to the full load (full throttle) reading.
- Reading with fully opened throttle grip (full throttle position):
3.6 – 3.7 volts
Adjusting the throttle sensor:
HINT: If you drill a small hole in the right side of the airbox directly opposite the lock screw on the TPS, the carbs don't need to be removed to set it. You can seal the hole with a rubber plug or

a piece of tape. See Dusty's image below.

(Image by Dusty)

- Loosen the screw on the throttle sensor (Torx head) and turn the throttle sensor until you reach the reading for the neutral position.



- Tighten the screw on the throttle sensor.
- Double check the voltage readings, and adjust as needed until in spec.
- Replace the cover in the adjustment hole.

Low Octane Plug: The LC8 engine in the 950/990 KTM Adventures and Super Enduros line have an 11.5:1 compression ratio. It is designed to run on 95 RON premium fuel. The equivilent octane in the USA is 91 octane (RON+MON)/2. KTM thoughtfully provided a wire under the seat that can be

disconnected when the high octane stuff isn't available. It causes the ECU to select a less aggressive ignition advance curve to prevent preignition. It is supposed to be good for down to 80 RON (77 in the USA).

KTM specifies that only one tank of low octane fuel be used at a time. ie: this is supposed to be for emergency use only. Not for a way to run less expensive gas as a routine.

cpmodem: I extended the octane wire up to the glovebox so I don't have to remove the seat each time I need to use it. Red Arrow in below image.

KOTH: On the 990 FI bikes, replace the fuel filter inside the left fuel tank. Be sure you also replace the filter screen. Note: This screen clogging may also be a sign of manufacturing reside left in the tanks (see the full story in Fuel tank residue). It comes in the kit with the round filter 61007090000 FILTER-SET FUEL PUMP.

See Dusty's photo article on replacing the 990 filters.

Be sure to have some spare fuel pump o-rings on hand as they are usually damaged during R&R of the fuel pump.

catalina38: Link to the proper o-rings for 990 fuel pump.

Width = .118"

Inside diameter = 2.337"
Outside diameter = 2.573"
Material = Viton

KOTH: With most jurisdictions changing over to the EPA mandated ethanol blends of gasoline, there has been an ever increasing problem with contaminated fuel clogging fuel filters in all motor vehicles. This is because ethanol is a good cleaner and removes all of the years worth of gunk built up in the service station tanks and vehicle fuel systems. Ethanol also deteriorates much faster than gasoline, leaving behind a nasty residue that clogs and wears automotive fuel systems.

If that wasn't enough, ethanol absorbs water which rusts and corrodes fuel systems and internal combustion engines. It also attacks aluminum, rubber and some plastics and fiberglass. The 990 injected engine with its internal filters is one of those effected. The filters are there for a purpose and are of the size they are to protect the fuel injector nozzles. There is also a small filter in the injector itself, that will become clogged if the pump filters aren't doing their job. It is much harder to change and requires more disassembly that changing pump filters.

KOTH: If you have just changed the fuel filters on your 990, and it won't start, check that the wires on the fuel pump itself (inside the tank) didn't get disconnected. Thanks to kirb for this tip.

costamarques: Sometimes when my 990 adv is cold the automatic starter puts the idle at +/- 4500 rpm for about 10 s and then drops it to 1500 rpm before setting the normal idle speed.

It was the battery.
Like others, I've been having problems with the battery for the last two months or so. Since I use the 990 on a daily basis it was only when I left it parked for 2 or three days that the battery went dead, and I was forced to bump start it. But last week the battery problem aggravated and also the idle one so it hit me that the two could be connected and they were. Since I installed a new battery last Friday the problem with the idle was solved....

Hammer: Ever since I got this bike, when the tanks were filled the left one would overflow out the front vent. At first, I went to Baja on it, and the short vent hose splashed my leg and gave me a nasty chemical burn. I cut off part of my Camelback hose and lengthened the vent so it would dump on the ground. It would happen anytime the fuel could heat soak, and I didn't burn off at least a gallon as soon as I put it in.
When I rode the CDR, I stopped in Jackson, WY, got lunch, and the restaurant staff shit their britches cause there was gas leaking on the ground under the bike.
It sat with the sun on the right tank one day and in 45F weather put a lot of gas on the ground.
I'd open the tank, and the left tank would be pressurized and overflowing. WTF?
I did a flapendectomy, problem was still there.
Then I found it. There's a check valve on the vent hose. It will let air in, but not out. If the gas heats up, vapor pressure forces it across to the left tank, and out the vent on that side.
Removed the check valve, and it's all healed!!!
And it only took a year to track it down....
Bottom line- if you have those f'in check valves on your vent hoses- get rid of 'em!

KOTH: Folks, you need to read and follow the instructions for the Canisterectomy and if needed, the Flappendectomy located elsewhere in the HOW.

Fuel Injection:

These are the latest KTM factory ECU maps (as of 2/06)
KM601US0704501 - US market
KM601EU603D01 - European market

The following is a basic description of the 990's FI from the Repair Manual:

BASIC DESCRIPTION OF THE SYSTEM

Fuel system:
Fuel is drawn in by the fuel pump via the fuel screen and pumped through the fuel filter to the pressure regulator. All of these components are located in the tank.
Since the fuel pump's flow rate and flow pressure are considerably higher than required by the injection system, a constant pressure of 343 kPa (3.5 bar) is selected by means of the pressure regulator. The excess fuel returns to the fuel tank unpressurized.
The pressurized fuel flows from the pressure regulator to the injection valves and is injected into the induction manifold when the injection valves are opened (induction manifold or indirect injection).
The system does not require an external return line since the pressure regulator is installed in the tank.

Injection:
The injection nozzles are controlled by the control unit based on the pressure conditions in the induction manifold (manifold air pressure sensors) and the rotational speed (pulse generator), taking the corrective injection periods into account (see above) - this applies to the lower load/speed range. The opening of the injection nozzles is calculated according to the speed and throttle valve signals at higher loads or speeds.
The injection is sequential, i.e. each injection nozzle is individually controlled and the fuel injected into the intake port of the respective cylinder.

Ignition:
The ignition is also controlled by the ECU using a conventional transistor ignition system. Both the ignition timing and the closing angle are calculated according to a stored map.
The ignition timing is established based on the following information: rotational speed, position of the throttle valve, the coolant temperature and the operating condition (idle/not in idle). The ignition timing is also reduced if the two octane selector connectors are not connected (when using low-octane fuel).

Idle control:
The control unit controls the idle speed depending on the cooling liquid temperature by opening the throttle valve wider or less wide with the idle speed control motor.

Trailing throttle fuel cutoff:
If the driver closes the throttle valve with the engine running at operating temperature at a speed of at least 5000 rpm (overrun condition, i.e. the motorcycle is driving the engine), the control unit will interrupt the control of the injection valves until the minimum speed drops below 5000 rpm. Purpose: to save fuel and improve exhaust emissions.

Speed limitation:
To avoid damage to the engine, the control of the injection nozzles is cut off at speeds exceeding 9600 rpm and the ignition coils cut off at speeds exceeding 10100 rpm.

Secondary air control:
Fresh air is introduced into the exhaust through a valve during the warm-up stage to improve the emission quality and to reduce the catalytic converter light-off time. Afterburning takes place.

Lambda control:
A lambda probe (one probe per cylinder) is used to find the ideal fuel/air ratio for the best possible combustion (at a mixture ratio of 1 kg fuel and 14.7 kg air). The catalytic converter installed in the exhaust can operate at maximum efficiency (at a maximum conversion rate).
The goal is to obtain the maximum lambda 1 air ratio, i.e. to make the air volume actually drawn in by the engine equivalent to the air volume theoretically required (to burn the quantity of injected fuel).

If the quantity of drawn-in air is smaller (i.e. air deficiency), the mixture is rich (lambda less than 1).
If the quantity of drawn-in air is greater (i.e. excess air), the mixture is lean (lambda greater than 1).

Electronic power control (EPC):
Under certain operating conditions, the second throttle is controlled in accordance with the throttle valve position and speed.

Error detection/elimination:
An "FI" error lamp is installed in the multifunctional digital speedometer that lights up for 2 seconds after "Ignition on" (function indicator) and goes out if the control unit fails to detect any errors.
The error lamp will stay on during operation if an error is detected; if the vehicle is standing (gear in neutral) the error lamp will start to blink according to the respective error code.

The registered error codes can be read out through the diagnostics connector using the KTM diagnostics tool and deleted after the error has been eliminated.

KOTH: Unlike the carbureted 950's, the Fuel Injected 990's only use the Secondary Air Control

(SAS) during warm up to get the CATs up to operating temperature (Light off). The ECU handles the emissions with info from the Lambda probes (and others) once up to temperature.

During cold start the engine requires a relatively rich mixture for smooth operation. So, the ECU operates in open loop mode with a fixed fuel map for the first minute or two of engine operation (depending on info from the temperature sensors) until the Lambda sensors have heated to operating temperature. By feeding air into the exhaust (secondary air), CO and HC are oxidized through after burning at temperatures over 600°C to form water and carbon dioxide. The resulting high temperatures also aid in bringing the CATs up to operating temperature more quickly.

To achieve efficient warm up operation, a high secondary air flow rate must be achieved within the first few seconds of engine startup, and the air flow rate must be maintained until oxygen sensor control is in operation. Air flow is maintained by the Secondary Air Control (AKA SAS or SLS). Once the lambda probes and catalytic converters have reached their operating temperatures, the solenoid valve cuts off the secondary air flow and the ECU goes into closed loop mode (ie: ECU adjusts AFR to maintain 14.7:1 ratio).

Air from the SAS during normal operations would result in false readings from the lambda probes. What a can o' worms that would be to factor into the map.

I see no reason to disable the SAS on the 990's.

Lambda probes:
The lambda probes screwed into the exhaust after each cylinder measure the partial oxygen pressure in the emission compared to the ambient air, i.e. the sensors compare the oxygen content in the emission with the fresh air.

A lambda probe basically consists of a ceramic body coated on both sides with a platinum layer. The platinum layer acts like an electrode. The outer layer comes into contact with the emission, the inner layer with the ambient air. The ceramic body becomes electro-conductive from a temperature of approx. 350° C; voltage is generated if the oxygen content between the ambient air (inner electrode) and emission (outer electrode) varies. The higher the difference in the oxygen level, the greater the voltage; the lambda probe voltage can lie between 0 and 1 volt in operation. Normally the lambda probe voltage will fall between 0.2 volt for a lean combustion and approx. 0.8 volt for a rich combustion.

NOTE:
- For lean mixtures (excess air) only part of the drawn in oxygen is required for combustion; a large share of oxygen remains in the emission - resulting in a low lambda probe voltage.
- For rich mixtures (air deficiency) almost all of the oxygen is burned; hardly any oxygen remains in the emission - resulting in a high lambda probe voltage.

The ideal operating temperature for a lambda probe is at approx. 600° C, although up to 950° C is possible for short durations. To reach the operating temperature as quickly as possible, the lambda probes used in this motorcycle are equipped with a heater switched on by the control unit.

NOTE: The ceramic body of the lambda probe is very sensitive to shock which is why it is covered with a slotted sheet-metal sleeve.

The lambda probes used in the LC8 F.I. engines are of the zirconia narrow band type. They are not designed to be used by the F.I. computer to achieve AF mixtures other than stoichiometric (14.7:1). Therefore, expecting to use it for tuning the engine map for performance is not practical

(nor possible). It is there, for all intents and purposes, only to keep the emissions in check. They are used only for operation below ~5000 rpm.

Catalytec Converter (CAT):

KOTH: The catalytic converter is installed in the main silencer and transforms most of the main toxic constituents into non-toxic compounds. It is designed as a three-way catalytic converter and consists of a coiled metal support whose surface is coated with precious metals such as platinum and rhodium; the coating only weighs 1 to 2 grams.

Similar to the lambda probe, the catalytic converter is not activated until a temperature of approx. 300° C is reached; it operates best between 400° C and 800° C. Thermal aging accelerates at a temperature of 800° C. Much higher temperatures occur if the ignition/injection system (e.g.: ignition faults) malfunctions, which can destroy the catalytic converter. The main constituents in the emissions are nitrogen (N2, not involved in combustion), carbon dioxide (CO2, the result of complete combustion) and water or steam (H2O, is bound in the fuel and released during combustion); together they comprise approx. 90% of emitted exhaust gas and are considered harmless. The rest mainly consists of carbon monoxide and hydrocarbon (CO and HC, both the result of incomplete combustion) and nitrogen oxide (NOx, the result of high combustion chamber temperature); all three are toxic.

To effectively convert these 3 components into harmless carbon dioxide, water and nitrogen in the catalytic converter, the engine must be operated close to lambda 1 (1:14.7 AFR), i.e. the efficiency of combustion is greatest close to lambda 1. But lambda 1 is almost impossible to achieve by control engineering, which is why the control unit continuously (several times each second) produces mixtures alternating between lambda 0.97 (rich mixture) and 1.03 (lean mixture). Under these conditions the voltage generated by the lambda probe varies between 0.2 volt and 0.8 volt depending on the exhaust gas composition.

The 15 minute Idle Trick:

Superduke: It seems there's a little confusion about the so called "15 min idle trick"
If the dealer changed the mapping (maybe for a different exhaust) he had also to do the 15 min idle run. But we don't want to change the mapping, we only want the EFI to "re calibrate. Because of the self learning EFI the "actual" parameters of the engine are measured and stored into the EFI as new basic information, if you do a 15 minute idle run.There is a good information about this in a document from KTM Sommer.
I will try to translate the most important things you have to do.

Preparation:
Enough gas in the tank !
Do it outside , not in a closed garage and somewhere in the shadow.
You need also a stop watch.

What to do:
The bike must be in a vertical position – so don't use the side stand for the procedure.
The engine must be cold.
Start the engine and let it idle for 15 minutes.
You are not allowed to use any functions of the bike in this time.
The time must not be less then 15 minutes and not more then 16 minutes.
If the engine stops running during this time, just restart it and let it run for the rest of the time.

Dave Zuber:
The 15 minute idle tip usually misses one very important point. It does nothing without the dealer

using the XC1 programming tool to reset the bike's CPU. This clears out about a dozen registers and THEN the 15 minute 'Initialization' will write back to these registers the learned information. Other programming tools may reset the CPU in the future, but I know of none that do this now (Feb 2012).

KTM recommends doing an initialization when ever you change or modify components, like spark plugs, air filters, valve adjusts, or if the bike is moved from sea level to Denver. Riding to Denver will modify settings as you ride there. Moving it won't.

Procedure:
Schedule a reset at a local dealer, (it should only take them 15 minutes to hook up the computer and reset the CPU.)
Haul the bike there so it will be at room temperature.
After the reset, haul the bike home without starting it.

Do the initialization outside because of exhaust fumes.
Have enough gas in the bike.
Sitting it on the center stand is better.
Pull out the blue fuse to turn off the headlight and save electrical power.
Set a fan in front of the bike to help cool it, but the engine needs to get hot enough to start the radiator fan.
Start the bike and let it idle for at least 15 minutes. Do not touch the throttle. Exact time is not important.
Shut the ignition off without touching the throttle.
Re-install the fuse.
Ride it.

Engine stalls when clutch is pulled in ~5,000 RPM:
The fuel injection computer shuts off fuel to the injectors when the throttle is closed at 5k and above. This can cause the engine to stall if the computer doesn't sense the clutch is pulled in at this time.

Andreas Berner, KTM Factory Rep: "When you pull the clutch, do you have one or more fingers behind the lever, and what position of the lever adjustment do you use?
Because there is an electrical switch telling the ECU that the driver pulled the clutch lever and with the lowest position of the lever and a finger between the lever and the handlebar it is possible that the switch is not activated!
So the ECU doesn´t know that the clutch is open and can not react by giving the engine enought fuel for idlespeed, this can also cause a stalling engine and is very hard to detect for the dealer, because there is simply no "failure".

KOTH: You can jumper the clutch switch and "fool" the ECU into thinking the clutch lever is pulled in, even when it's not. This will keep the ECU from shutting off the fuel during overrun situations and the bike will no longer suffer from this malady. A side benefit is that the throttle jerkiness so prevelant in the 990 during off-on throttle transitions will be lessened.

Fuel Injection Tuning With TuneECU:

jetpoweredmonkey: Hey gang, on another thread, a helpful inmate pointed out a freeware EFI (ECU) reprogrammer called TuneECU. It is 100% free to download, the link is below. To use this software,

you will need a USB to OBD2 interface as well as a couple of connectors to build a patch cable in order to plug it in to the KTM.

I've downloaded the software and ordered the parts to make the adapter cable (the adapter cable goes from the USB interface to the bike). I am not a tuner, and I don't know anything about plugging numbers into my ECU to make the bike run better, and I don't know anything about dynos. I am also absolutely uninterested in finding more power in my 990, because it already has about 60 more HP than I have room to use, most of the time. However, it also has annoying and seemingly random hesitations that I'd like to be rid of.

That said, I'd like to be able to play around with different maps without the hassle of taking the bike to the dealer, and the associated hassle of opening my wallet for a five minute operation. I'm guessing there are some other folks who probably feel the same way. What I'd like to do is collect up some tunes for experimentation. It looks like the stock and Akro (open exhaust) map tunes are available here and there on the 'net. Maybe others have had custom tunes built for their bikes on a dyno (using Tuneboy or some other software). I'd love to get my hands on some of those so I can compare maps. Whether that will end up doing me any good remains to be seen.

Some possibilities to try (maybe) - "R" tune on a standard bike - '09+ tune on an older bike. Possible? Dunno yet.

Anyway, once I get this thing up and running, I will be game for some experimenting. I'll keep you guys posted and if anyone wants to try out a different tune, you are welcome to swing by my place here in Sacramento and jack in. Not OFF.

The risk here is that the upload will be unsuccessful and turn the very expensive ECU into a brick. Somewhere I read that this can be reversed using the dealer tool, but in any case I'll do some homework before I go flashing any bikes, including my own.

Some links:
ADVRider Thread
TuneECU
TuneECU Download Page
USB OBDII interface (or check ebay)
OBDII pigtail
KTM connector

Adjusting 990 idle: Helmet head shows us how to adjust the 990 idle screws.

Improving 990 Throttle Response: This article from the French KTM Adventure Forum describes a method purported to be used by KTM on bikes they lend to bike test magazines. Preliminary reports are that it removes the jerkyness from the 990's throttle response. Note this is all unsubstantiated at this time, so you are on your own (you are anyway) with this one.

Stepper Motor Equivalent:
Bikyto: As you know, ktm only sells the whole throttle body for $1100-1300 depending of where you get it. Most people that have eliminated all the possible issues with sensors, tps, TB sync, pressure sensor...etc... And still have erratic idle issues, notability an idle that goes up and down or gets stuck at a particular rpm.... Are usually left with the need to replace the stepper motor. Well, here is the part that can replace the stepper motor on our throttle bodies for about $200 or so.

Triumph 1050 Speed triple/1050 ST ----- part number T1241182

FI Light:
Hondahawkrider: FI light has come on.. It stays on when in gear - but blinks when it's in neutral.. It's One Long Blink - followed by 7 additional quick flashes.
aurel: According to the manual it's the error code #17 = rear lambda sensor failure.
skritikos: If you have the tank protective bars installed, check the left side clamp that connects them to the frame. The cable for the rear lamda sensor is passing very close and it is easy to catch it with the clamp (short circuit, or even cut it).

Hard Starting:
kelly duke 2000: Hi guys, bought a 06 950 with 13,500 miles on it. Started and ran great but never had the valves adjusted since break in. Took the bike in and had the major service [$700.00] done. I get it back from the shop and now hot or cold it won't start unless I crank the shit out of it and add almost full throttle and add choke. Before the service I would choke, crank with no throttle, and it would start within a half a second.

It was an unconnected vacuum hose under the clutch side fairing by the turn signal connector.

kdscoates: I pinched a vacuum line and she was extremly hard to start but ran good once I started her!

eduardobibm: Same exact symtoms with my bike when I brought it used. Turned out to be a vacuum leak. I don't know the proper technical terms but one of the lines coming out of the intake manifold was open on one end. There are two (obviously) intakes underneather the carbs, with one small line coming out of each side. Trace these lines and check em. You can get to this with the tanks off.

jsrider: I thought I put my cams back on wrong and had a timing problem (loud backfire; stall)-. Turned out the grommets that sealed the airbox to the intake manifolds weren't on right.

KOTH: Back to the canister again. If you're too lazy, or stubborn to do a full Canisterectomy, when your bike "takes a nap" on its side, the canister and carb vent lines become clogged with fuel. The bike becomes very hard, if not impossible, to start. A temporary fix that may get you started and back on the trail, is called a Canisterectomy Lite and invoves removing a knurled plug from the canister drain line. Check out furndogs article for further info. Note: this trick will not fix other problems caused by the canister, such as pressurized fuel tanks, uneven tank levels, running out of fuel with one full tank, hydrolock, to name a few.

Starter Interlock Conundrum - 2008 990 Adventure: Follow this link to a description of Hilslamer's starter interlock box connector discovery.

KOTH: If you have just changed the fuel filters on your 990, and it won't start, check that the wires on the fuel pump itself (inside the tank) didn't get disconnected. Thanks kirb for this tip.

Neutral Switch Adjustment: So, the neutral light won't stay on when you are in neautral. Sometimes if you put pressure on the lever in one direction or another with your boot, the light will come on but goes out again when pressure is released. Sound familiar? Well, a lad over on the British KTM Forum called "Howz" found a fix for his LC8 with this problem. Thanks to BLUE(UK) for the link:

"How lucky am I....!!!

I took off the side stand and undid the cover to the offending item, I could see that the contacts on the back of the cover looked a bit dirty and worn so rubbed over them lightly with a bit of wet and dry and then sprayed with contact cleaner, put it all back, it was better but still did not engage the neutral light all the time, so I took it apart again and had a look at the small stud (mine only has one) that is in the barrel, I took this out and found it has a spring behind it, so I stretched the spring just a little bit and then put it all back together again.....IT WORKS!!!"

Sidestand Bypass:
Louge: Connect green and black wires together. http://www.advrider.com/forums/showthread.php?t=127118

KOTH: On the other side of the connector you need to tie the brown and pink wires together

KOTH: BTW, this doesn't work with the 990's or the 950 SE and SM due to the use of a HAL effect device on these models. Neither does grounding the pink wire to chassis ground. It will simply throw a sensor error code (ECU must see 1.0vdc min).
Sidestand: up = 2-3vdc, down = 4-5vdc
See below.

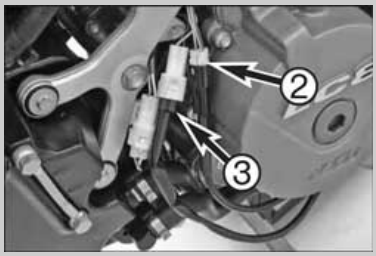
950 SE/SM and All 990's - Sidestand Bypass:
ABYSS: Install the Super Duke sidestand bypass PN 61011046044

cpmodem: Here's another option for any 950/990, including the ADV, SE and SM. A bad diode could still strand you as these emergency bypasses don't bypass them. However, 99% of the time they will allow you to get back to civilization with a malfunctioning safety switch/sensor, where you can do a proper repair.

Ground the green-black wire at the connector for the gear selector switch (#2 in the photo below). Down in front of the rotor cover on the left side of the engine). This will allow the ECU to provide ignition to the coils no matter what gear you are in, whether the kickstand is up or down, and clutch in or out. This will eliminate any possibility of one or more of the "safety" devices malfunctioning and killing the ignition. It will also allow the starter to work anytime the button is pushed And your green neutral light will stay on always. But, as I said this is not for "casual" use, but rather for emergency situations only. Like as a quick and easy way to bypass a failed safety device when one craps out in the boonies and you just wanna get home.

BTW, arrow #3 in the photo points to the sidestand switch connector where ABYSS's permanent fix

is to be made.



KOTH: Another option for bypassing all of the start safety switches/sensors, that doesn't leave the neutral light on, is to jumper the clutch switch.

On my '03 950 the connector at the clutch switch is a molded piece that is difficult to get off ,and when you do, you find that it isn't easy to do a good job of jumpering the connectors molded inside a piece of plastic. For a roadside/trailside fix it is simpler to do the above fix at the neutral switch. Other models and years have different types of connectors. You'll just have to look at what you have and decide from there.

However, a sanitary bypass can be done at the clutch switch connector further down the line at the main wiring loom behind the headlight. You will need to remove the windscreen and headlight unit to gain good access. Then you should see something like this image if you have and Adventure (SE, SM, and SD are slightly different locations. See the Repair Manual):

Jumper the brown and yellow wires together. This will make the ECU think that the clutch lever is pulled back constantly. On 950's this will have the effect of allowing you to start the bike in gear, with the sidestand down without pulling the clutch in. On the 990's the same effect will be realized as with the 950's. Additionally, it will effect how the ECU controls the idle speed, and it will disable the Trailing Throttle Cutoff function.

Driving off with the sidestand down will be a real possibility, with all of the dangers associated with that. I don't think I have to tell you how dangerous it can be if you start your bike in gear without the clutch in, or ride off with the sidestand deployed. This (or any of the procedures described) is/are to be used only as a last resort to keep from being eaten by bears if you breakdown in the woods.

Electronic Power Control:
KOTH: If you have the Electronic Power Control (EPC) system on your bike (all EU spec bikes 950/990 including early '04 USA), you can disable it by snipping the two wires that tell the ECU that the bike is in 2nd or 3rd gear. These are the gears in which the EPC limits engine acceleration

to comply with European noise regulations. If you are not in Europe you likely don't have any noise tests to comply with. You will still want to remove the EPC valves from the 950's as they are subject to malfunctioning even when not connected to electrical. The connector for the gear sensor is #2 in the above photo.

yellow-brown = 3rd gear
gray = 2nd gear

FastEddy760: Pins Removed for Gear Sensor. It is easy, and this will help take the guess work out of the process.
1. Left side, follow wires from the gearshift and the side stand sensor (#2 in above photo).
2. Disconnect the plug, and put the side stand end to the side, it fits nicely over the flywheel cover, and out of the way.
3. You will be working on the end with the gray, yellow/brown, and green/black wires.
4. Use a small jewelers screwdriver inserted into the plug, and a little tension on the wire, to pop out the female leads for the gray and yellow/brown wires. Leave the green/black wire connector alone.
5. Cover the wires with shrink tube so they wont ground out.
6. Plug back together so the neutral switch will still work.

Fuel Pumps:
ridewestKTM: Stock pump pressurizes to 2.2 psi at carbs. It draws 1 amp when running (shuts off when fuel pressure is up). It pumps 23.4 liter/hr. It's 1.875" in diameter and 3.36" long. Has a vent to the point case (apparently). Brown wire is ground and dark wire is positive.
One other thing, the stock pump doesn't flow thru via gravity - it takes about 1/2psi to push gas thru it. The Facet 40105 flows easily.

Stock pump. The solenoid coil fires and pulls back a diaphragm sucking in gas, and it does so against a spring. When pulled back the points open, so the coil is not doing anything. The spring pushes on the diaphragm and if the carb's are not letting in the fuel it just sets there at about 2 psi. As the carb's pass fuel the spring pushes the diaphragm and the diaphragm pushes fuel to the carbs. When the diaphragm has fully discharged that stroke's worth, the points close to refire the coil and draw back the diaphragm If allowed to flow fuel unrestricted it will suck and discharge 2 or 3 times a second. But the cycle rate is determined by the usage and the constant volume per stroke.

gefr: The solutions for the fuel pump problem are the following:
1) Facet 40105, correct head pressure 3-4,5 psi, leaks through, needs added check valve. 40104 proved insufficient and 40106 floods the carbs when operating as reported by kawidad. Model 40171 could be THE solution like cpmodem suggested months ago, if it proves sufficient in keeping the motor well fed, but its head pressure of 2 - 3,5psi is less than 40104 which is 2 - 4psi.
2) Carter , head pressure of 3 - 5,5 psi , leaks through as autostream and jsrider have reported. Is sold by NAPA as #P74021, needs check valve. Big advantage the fitment in the OEM rubber. More expensive than the Facet.
3) Airtex E8016S , head pressure of 2,5 - 4,0 psi , no problems have been reported, but very few believers, so very small specimen. Price reported at $52 by John Graves or $65 according to jameng with no flooding problems as of today. Fits in OEM rubber. The info given in jameng site is that the Airtex is a rotational pump. It seems identical to the carter pump so they probably are identical, both rotational and both flowing through. So they prop ably both need a check valve. Updated post. All these solid state pumps need a filter to protect them. Cheers.

Pointman0853: The stock pump is a 'demand type'. Here is how it works. Upon start up, the pump

cycles on for about 5 seconds, pressurizing the fuel line up to the carbs. Once the line is pressurized, the pump stays in the 'open' position and stops working (ie: the line is pressurized, we need no more fuel). As line pressure drops, the diaphragm in the pump collapses and the points make contact and the cycle repeats. Repeats that is, until the points burn out as in the pics above. Or you get it wet. Or it just decides you are now in a beautiful natural setting and it doesn't care... it's just going to take a shite and leave your sorry ass right where you are... 😉
The Facet 40105 is a floating piston pump. Here is how IT works. DC current is applied to an electronic circuit that converts the DC to AC, which for those of you in Rio Linda, CA. translates to 'Alternating Current'. The Alternating Current is applied to a coil thereby creating an alternating magnetic field. Inside of this field is a metal 'shuttle piston' that now slides back and forth. A one way valve in the mechanism makes sure the fuel only goes up to the carbs, which is why there is a directional arrow on the pump housing. The looseness of the shuttle piston in its bore, insures that the pressure will not exceed a set amount. The pump just sits and buzzes fuel up to the carbs. all day long. One moving part, Homer Simpson simple!😜
Class Dismissed!

Dennis Douglas, Pillar Point Avionics, Inc.: The Facet 40171 pump is the type sold by Stoddard-Hamilton Aircraft , Inc. (360-495-8533) to serve as a transfer pump for transferring fuel from the auxiliary tanks to the main tanks. The 40171 costs about $54 each. The Facet 40105 and 40106 are sold by numerous suppliers, including Aircraft Spruce and Specialties (800-824-1930 (west); 800-831-2949 (east)), Chief Aircraft (800-447-3408), Wicks (800-221-9425) and others and typically used in the Zenith and other aircraft for transferring fuel from an aux tank to a header tank. The 40105/6 pumps cost about $28 to $32 each.

Physically, the 40105 and 40106 are identical. Both Chief Aircraft and Aircraft Spruce picture these pumps in their catalogs. The 40171 looks slightly different than the 40105 / 40106 models in that the inlet and outlet ends of the pump are about 1/4 inch longer than the 40105 / 40106 to accommodate the check and foot valves. (I haven't found any pictures of the 40171.) Functionally, there is a world of difference between the 40171 and the 40105 / 40106. All three model pumps have a "lift" capability and can draw fuel from at least 3-feet. All three move the fuel at about 0.5 gal/min, or about 30 gal/h when they are operating.

In the "OFF" state, however, the differences between the pumps become more obvious. At a 30-inch head pressure, the 40105 and 40106 pumps have a forward "leak" rate or drain rate of about 15 gal/h. These pumps thus flow freely in the forward direction at about one-half the pumping rate.... In the reverse direction, the 40105 and 40106 drain backwards at between 0.05 ga/h to about 0.25 gal/hr, with a mean value over a dozen tests with four different pumps of about 0.1 gal/h. (As a point of reference, 0.1 gal/h is about one drop per second). Compare these numbers to the 40171 pump, which showed no detectable leakage in the "OFF" state in either the forward or reverse directions over several hours.

You can identify the model by looking at the mounting tab on the pump. One side of the mounting slot will be stamped "40" and the other side will be stamped "105", 106" or "171".

KOTH: Numerous model pumps, including the 40171, are available with integrated anti-siphon or positive shut off valves. This valve prevents the flow of fuel through the pump when the power is disconnected. They are useful for certain applications where the pump and fuel destination are below the level of the fuel being pumped. They cannot be used in an application where it is desired to draw fuel through an un powered pump.

Numerous model pumps are available with integrated check valves. These valves will keep the fuel lines full between the pump and carburetor when the power is shut off. They provide enhanced lift

capability over the standard inlet valves.

cpmodem: No oil pressure cut off switch is required if you connect the new pump (Facet or whatever) to the existing fuel pump wiring (black-blue and brown). The ECU controls the fuel pump through the fuel pump relay. The ECU is also what allows the fuel pump to run for a few seconds when the ignition switch is first turned on, butt the engine isn't running yet. Once the engine is running, the ECU provides power to the fuel pump relay continuously. When the engine quits running, the ECU shuts off power to the fuel pump relay, thus keeping the pump from pumping fuel and creating a hazard in the event of a crash.

The OEM Mitsubishi pumps use a contact point interrupt mechanism to regulate its duty cycles. The Facet 40xxx series fuel pumps run continuously as long as +12vdc is applied to their inputs. My 40171 draws 740 ma while running.

Facet's oil pressure switch warning is generic for all positive displacement electric fuel pumps 'cuz many are installed in "non ECU controlled" systems. Also, always install a fuel filter upstream with these type electric fuel pumps. They have precise clearances that will eventually be damaged by crud in the fuel system.

slaw: For Facet pumps in the UK: http://www.partsforaircraft.co.uk/

12 VOLT FACET® CUBE FUEL PUMPS

PART #	MAX-MIN PSI	GPH	POSITIVE LEAD	NEGATIVE LEAD	FITTING SIZE	DRY LIFT	CHECK VALVE	POSITIVE SHUT-OFF
40104	4. - 1.5	25	N/A	.25 RING	1/8-27 INT	12	N	N
40105	4.5 - 3	30	N/A	.25 RING	1/8-27 INT	12	N	N
40106	7. - 4	32	N/A	.25 RING	1/8-27 INT	12	N	N
40107	10. - 7	38	N/A	.25 RING	1/8-27 INT	12	N	N
40108	6 - 4.5	32	.25 BLADE	.25 RING	3/8 FLARE	12	N	N
40109	7 - 4.0	32	N/A	.25 RING	3/8-18 INT	24	Y	N
40135	7 - 4.	32	PACKARD	.25 RING	1/8-27 INT	12	N	N
40136	7 - 4.	32	PACKARD	.25 RING	1/8-27 INT	12	N	N
40137	7 - 4.	32	PACKARD	.25 RING	3/8-18	24	Y	N

					INT			
40138	7 - 4.0	32	PACKARD	.25 RING	1/8-27 INT	24	Y	N
40139	4.5 - 2	23	PACKARD	.25 RING	1/8-27 INT	24	Y	N
40147	9 - 4.5	32	.25 BLADE	.25 RING	1/8-27 INT	24	Y	N
40148	4.5 - 2	24	.25 BLADE	.25 RING	1/8-27 INT	24	Y	N
40163	2.5 - 1.5	17	.25 BLADE	.25 RING	1/8-27 INT	24	Y	N
40166	39 - 25	9	175 BULLET	..	1/8-27 INT	..	Y	N
40171	3.5 - 2	15	PACKARD	.25 RING	1/8-27 INT	12	Y	Y
40176	5 - 3.5	19	N/A	.25 RING	1/8-27 INT	36	Y	Y
40177	2. - 1	7	N/A	.25 RING	1/8-27 INT	24	Y	Y
40178	3.5 - 2	15	N/A	.25 RING	1/8-27 INT	36	Y	Y
40185	11.5 - 9	32	N/A	.25 RING	1/8-27 INT	36	Y	N
40189	5 - 3.5	15	AMP	.25 RING	1/8-27 INT	36	Y	Y
40217	3.5 - 2	15	.156 BULLET	.25 RING	1/8-27 INT	36	Y	Y
40229	6 - 4.5	32	PACKARD	..	1/8-27 INT	12	N	N
40231	11.5 - 9	25	PACKARD	.25 RING	1/8-27 INT	84	Y	Y
40232	10. - 7	34	PACKARD	..	1/8-27 INT	12	N	N
40241	3.5 - 2	15	.157 BULLET	.25 RING	FEMALE FLARE	36	Y	Y
40252	1.5 - 1	6.5	PACKARD		1/8-27 INT	24	Y	Y
40254	4 - 1.5	25	N/A		1/8-27 INT	24	Y	N
40257	11.5 - 9	25	N/A		1/8-27 INT	84	Y	Y

Servicing the OEM pump points:
Yogoi: This is what I have done. (remove, open, clean). It easy, and has worked for me.

- **Drop the skid plate.**
- **Turn off fuel valve.**
- **Pull off the two fuel lines (you can do it without cutting the clamps, but its easier to get rid of them and put regular hose clamps on).**
- **Unplug, and pull the pump and rubber housing down off the bike.**
- **Unscrew the philips head and pry off the black cap (It might sealed with some type of glue).**
- **You'll see the points. make sure there aligned and the screw that holds them is tight.**
- **Clean them with an electrical spray.**
- **Now the hard part is to get the black cap back on with to "O" ring seated right, and the rubber ring that seals the hole that the wires go through (you'll see what I mean, and its ok to swear a few times).**
- **Connect it all back to the bike and enjoy.**
- **Important. Make sure you route the breather tube correctly (the higher the better).**

Carburetion:
Head2Wind: When I say 2.5 (which is the stock position) I am saying, thin shim/#2clip position/thick shim. 3.0 would be #3clip position/thin shim/thick shim ("parking" the .5 shim on top of the clip has no effect on needle position relative to the slide). In most cases when "going up one clip on the needle" most people leave the .5 shim under so therefore are really running in a 3.5 position. In very general terms what we are trying to do is get L1 (where the taper starts) and hopefully L2 if the needle is the correct length (and/or L3 if it is a tri tapered needle) in the best place for "transitioning" from 100% Pilot/low circuit through to 100% Main circuit. One of the documents that I reference a lot:
http://picasaweb.google.com/Head2Wind/SlideNeedleMarked

K2M: The problem by fixing that cruse flat spot by lifting the needle is that you introduce way to much fuel at idle.... off idle. I'm not surprised that she bogs at altitude. She will be down on power all over the place.

A much better way would be to change out your pilot air leak jet #80 to a #70 or #60 available from KTM. Experiment!

Sidestand Removal:
WOTF: If you don't have a good aftermarket skidplate that protects the sidestand switch, common wisdom is to remove the entire sidestand and mount when going offroad. The reason is that if a hard object is struck with the exposed sidestand and/or mount it is possible to crack the engine case. Don't go too crazy worrying about the sidestand. It is still strong enough for "normal" usage. Its not gonna break unless it gets a pretty hard whack in just the right place. If you do a lot of offroad with hard things that you might smash the bottom of your bike against, definitely relocate the sidestand or install an isolation bracket and a good skid plate. Its not likely you'll damage the engine case in any other scenario.

Before you remove your sidestand for good take a look at this:

Tip for tire bead-breaking on the 950:
Flanny: I've been meaning to post this for some time, but keep forgetting.
I discovered a trick for breaking the bead on the tubeless scorpions...

Set the wheel down next to your buddies side stand, (A heavy bike like a GS would de very well), and use the sidestand and bike weight to pry the tire down off the bead ...works like a charm.

If you have a 950 with a centre stand and sidestand, you can do this yourself. With the bike on the centrestand (and the rear wheel off obviously), take out the sidestand, and use it to pry the bead down with the weight of the bike ...piece of cake. So...no need to carry bead breakers etc.

Re-installing sidestand springs:
Arch: In the past I've used coins or washers on tough ones. Slide them into the spring's windings one at a time to slowly expand it out. Once it's the right size and installed on the tangs, take the coins/washers back out.

Location of the ACC wires:
WOTF: Both are bundled together and zip tied to the fairing support. You don't have to remove the headlight assembly to access them (as in the photo). They are easily accessed by removing the right front fairing. ACC1=always on (yellow-red). ACC2=switched with ignition (red-black). Ground wires are also in the bundle. Later bikes will have the carb heaters connected to ACC2 (also same with retrofitted carb heaters on the early bikes). Fused with 5amp fuse on early bikes 2003-2004. Fused with 10 amps on all later bikes and those with carb heaters. Same size wiring (0.5mm) on all years.
(image by hitmike)

Tires and Suspension for Offroad:

Sheep Shagger: Spokes are the same part# between the ADV and SE front wheels, so that means the hub's (apart from twin disk) are the same, so is the lacing / offset. So no reason why you can't just use a SE front hoop on the Adventure.
6000907010030 RIM FRONT 2,15X21" BLACK 07 $291.99 - ADV
6300907000030 FRONT RIM 1,85X21"DIRT STAR 06 $241.99 - SE
60009071000 FRONT SPOKE M5X230.5MM 13.5 DEG $4.03 - adv/se

cpmodem: There's a little confusion (don't worry, the pros are confused too) here. The OEM springs are rated in Newton meters per millimeter (nm/mm). Most aftermarket springs are rated in Kilograms per millimeter (kg/mm). thus the "slight diff in numbers. You will also note that the OEM spring is rated at 4.8 nm/mm. The aftermarket springs I use (Eibach) are rated at .52 kg/mm. note the position of the decimal point. FWIW, the OEM springs tested .46 kg/mm when 2 years old. Which is lower than spec. See the conversion tables at the bottom of this page.

Factory specification for fork fluid on all LC8 WP forks is SAE 5 weight. Using heavier weight oil has minimal effect on damping with the cartidge fork valving on these forks. Also, note that different brands fork oils vary significantly from one another. So if you're looking to tune to the little subtleties a change in fluid weight will bring out, stick with the same brand.

James Siddall: One of the biggest issues you are likely feeling, is the dynamic imbalance caused by the spring force difference front to rear. The softness in front with the stock setup sees it getting low too easily, this steepens the geometry and decreases the effective trail in many situations, leading to a nervous front feel. The weight she carries ups the stakes in this situation. The valving in front is also light, allowing the forks to move quickly, increasing the unpredictability. What we want is a balanced carrying of the entire load, front and rear, with enough hydraulic control to allow these changes to happen more gradually, allowing the rider sufficient feedback and time to react and feel comfortable. The stock setup in the rear is quite firm which aggravates the softness in the front. Your thoughts on changing the weight distribution are all valid and sound, but with a balanced amount of spring froce you can make the 950/990 into a far better dirt bike than it should have any right to be.

The key thing to consider when setting ones suspension up, is that there is an optimal spring rate, an optimal amount of damping and an optimal amount of bleed allowed by the clickers. No one one of these can substitute for the other. When adding spring rate only, One can safely assume the fork will ride higher in the stroke, and less loading of the tire in this case could lead the front to feel less planted mid corner. The upside to the increased spring rate is a cure for the lack of spring force progression inherent in the stock setup, which leads to bad bottoming off road, and overlading of the front on slab.
If you increase spring rate without revalving to increase rebound, you may find slowing the rebound clicker to be the best band aid for the increased speed of return the heavier springs create. Bear in mind it is only a band aid.

The stock setup on the 990 is fundamentally out of balance front to rear.
The adjusters are best thought of as trims to the stock setup. The clickers meter low speed oil flow most of all, and lack the authority to make a major impact on the overall setting. This is where the need for revalving arises. Spring balance is also off and is best addressed by adding firmer fork springs.
Consensus opinion is the the sports settings are the best recourse for spirited riding of the stock setup.

Fork dive, which the stock setup has an abundance of, is best mitigated by stiffer springs and more damping. The fork oil level (airgap) has an effect, but more so deep in the stroke. It is an effective tool to increase bottoming resistance, but more spring and hydraulic force are needed to get the initial dive under control. The increase in spring force will get the front to ride higher in the stroke, helping with front feel in the sand and other off road situations. The spring balance in standard trim is quite firm in the back and quite soft in the front. Stiffer springs and valving in front are the best way to get your balance back. The improvements are tremendous.

The shock has the same length shaft for both models. The shock travel is set by the length of the internal top out spacer. KTM parts fiche refers to this as the rebound shim. The bike will need an appropriate length spring and spacer to match.

Fork Projection:

James Siddall: When you make chassis changes like this, a variety of things happen, but the most telling change when you increase the fork projection through the triple clamps is that you cause the rake angle to steepen, and you cuase a corresponding decrease in the trail.
Why would I want to do this you wonder?
Well, when you reduce the trail, you reduce the steering effort , and sharpen the steering response. At the same time you decrease the amount of feedback from the front tire (because you have reduced it's self centering tendency).
This can be a positive or negative change depending on where your current setup finds you in the window of dynamic trail.
Typically a riders experience of a bike with too little trail will be that of the front tire feeling being a complete mystery up to the point where they tuck the front unexpectedly. Conversely a bike with too much trail will feel like it can't possibly be leaned over far enough to draw the right arc through a corner. The front tire will feel unloaded and will not inspire confidence either.
My personal 950 a-ha moment came riding a long slab section down highway one in Baja through the twisty mountain passes on the sea of cortez side. I was travelling with two other washed up roadracers and of course we are all hopelessly competetive. On the run into Mulege I struggled to

not feel like I would ride off the side of the front tire. Overnight I pushed the forks through 15mm. A big change but enough to be sure of the direction.
Revalation. The next day I had the measure of my buddy who had had the measure of me the day before.

Do try experimenting with projection and be methodical. You can definitely improve your setup and suit it to your personal tastes.

Fork Springs & Damping :

MAXVERT: James Siddell who is Super Plush Suspension, and I hear they do awesome suspension tuning on our bikes sends these fork spring lengths.
'04-'05 485mm
'05.5-'06 465mm which will fit the 990

James Siddell: The short answer is that the springs and the valving do two different and sometimes complementary things. If you want to (over) simplify things, you could think of it as a case where the spring force determines the position the suspension will settle to, and the damping determines the speed it gets there.
As I've said before, increased spring force will make your 950 work better, but not as well as a respring and revalve, because the lack of spring force is not the only problem with the stock setup. It lacks sufficient valving to control the wheel.
If you try to compensate for a lack of damping by increasing spring force, you will end up with a setting that has too much spring, and either rides high, or has no effective rebound control, or both.

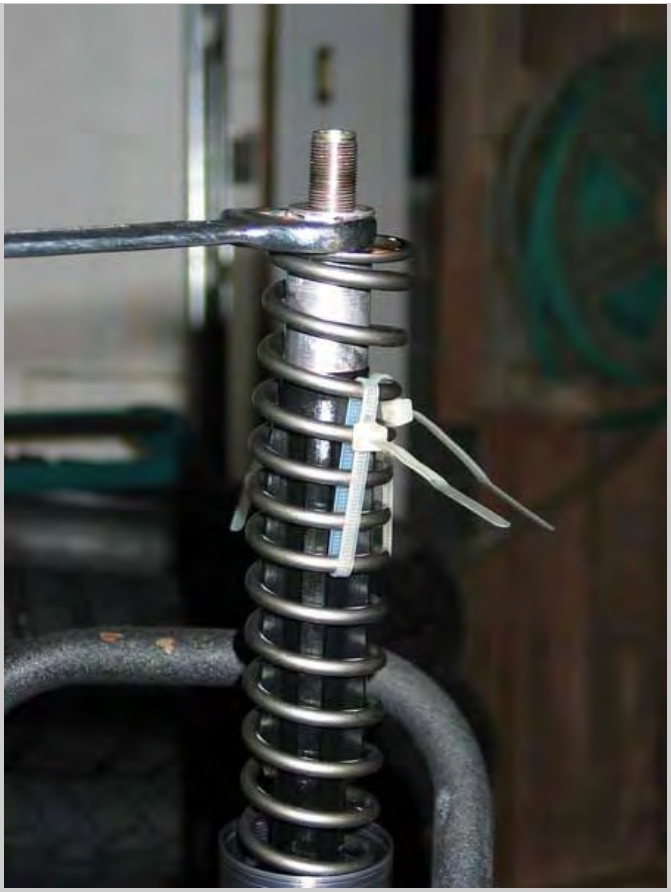
Unfortunately the old school solution of thicker oil was a better solution for damping rod forks, and even they still needed modification to take advantage of that as the thicker oil increased both rebound and compression, generally making the rebound too much before the compression came good. In modern cartridge forks, thicker oil is a bad idea as it cavitates more easily than the thinner oils.

cjracer: The SE springs fit into the 04' "S" forks with out need to modify the hydro stop. The stop was the same diameter as the one in my 06' "S".

With the SE .59 springs I installed a .850 spacer in the 04', my 06' took .410.

The 04 "S" took about 750cc of oil to fill up 100mm from top.

Antware: Find it impossible to hold the hydro stop up and compress the springs at the same time while trying to get the spanner on?
Spot ties...



Checking Race Sag:
Paul Thede, Race Tech Suspension:
Step# 1 – Extend the forks completely (raise the front wheel off the ground) and measure from the wiper to the axle. This measurement is called "L1".

"L1" Front Suspension extended
"L2" Rider on Board, Push Down, Let Up
"L3" Rider on Board, Pull Up, Let Down

Step #2 – Remove the bike from the stand, and put the rider on board in riding position. Get an assistant to balance the bike from the rear, then push down on the front end and let it extend very slowly. When the forks stop, measure the distance between the wiper and the axle. Do not bounce the front forks. This measurement is called "L2".

Step #3 – Lift up on the front and let it drop very slowly. When the forks stop, measure again. Do not bounce the suspension. This measurement is called "L3". L2 and L3 are different due to stiction in the seals and bushings, which is higher for telescopic forks than for rear shocks.

Step #4 –Halfway between L2 and L3 is where sag would be without drag or stiction. Therefore, L2 and L3 must be averaged and subtracted from L1 to calculate true sag.

Sag = L1 – [(L2+L3)/2]

Fork Seals:
Tim McKittrick: The seals on my 950 began to weep at 6K and I was distraught- I pulled the wipers down and wiped between the seal and the fork tube with a thin piece of plastic (actually a strip of

trimmed 35mm film) and the leak stopped. I now clean them every 5K or so- the bike has 23000 on it and while I have a new set of seals and all the tools at the ready I don't plan on changing them any time soon.
Moral: clean the wipers regularly and the seals at every oil change. There is even a notation in the owners manual to this regard- at least about pulling the wipers down and cleaning them..

James Siddall: If the seals do need changing the later seals are improved 48600399, and if you want to change the dust wipers as well 48600400

Rear Shock:
WOTF: Once the front forks are tuned for your weight and riding style, the rear shock should be tuned for the same. Rear race sag should be your starting point. This will help determine the proper spring. Valving in the PDS shock can be improved to yield a much more compliant ride for improved traction and control. For the maximum in shock compliance, consider replacing the remote reservoir piston with a bladder. The piston adds friction and inertia loads that slow the shock's ability to react to high speed changes such as sharp edged bumps. Many top riders report a much plusher ride with the bladder compared to the piston. I noticed an immediate improvement in ride over concrete expansion joints, railroad tracks, and washboard. For more info on tuning your suspension see: Suspension Basics by James Siddell of Superplush.

Steering Head Bottom Bearing Removal Tip:
YOGOI: I pressed mine out. No problems.
I tried the "remove outer cage and tap down the inside race" trick, but it didn't work. The little lip that you can tap on easly broke before there was any movement of the race. I had a local machine shop press out the shaft, and off the bearing comes with it. Then I had them press the shaft back in. It took him 1 min. it was real easy, and he didn't charge me (tiped him for good Karma). I used the old race and to tap the new bearing on and all was good.

950 Speedo Problem:
bobhclark: On my last trip the speedo started generating random numbers, then quit altogether. I found that the cable from the sensor had become frayed from chafing on the fender.

WOTF: Several Inmates have reported the speedo wire breaking up near the handlebar where the protective sheath ends and the small black cable exits. The break is internal and not obvious upon visual inspection. To check, wiggle the black wire with the ignition on and watch for random numbers on the speedo. The three wires can also be checked for continuity with a VOM. The fix is either a new cable (60014069050, $77 at cheapcycleparts.com), or remove the insulation and repair the break. Be sure that the black wire is free to move without stress as the speedo cable moves up and down with front suspension travel.

KOTH: Speaking of the speedo, jaydee1445 came up with the info to access the trip #2 rallye functions.

"The conector is tie wraped under inst. cluster. I believe it is rectancluar with four wires:brown, br/yellow, yellow, gr/red.
Brown wire is ground.
Brown to yellow cycles functions.
Brown to Br/yellow increments trip 2 down.
Brown to gr/red increments trip 2 up.
I found a small switch @ radio shack PN 275-1571 that looks like you could get all three to fit"

Photo by: cjracer

Speedo/tach jumping around:

ghostdncr: A couple of days ago on my morning ride into work, I noticed my speedometer searching. It was bouncing around from the approximate 70-75 mph I was traveling to 88, 19, 22, 45, 75, 6, etc. in very rapid succession. It cleared up after a few minutes and life went on. It did the same thing yesterday, but only a time or two and then settled right down. What was NOT expected was losing my entire dash at a stoplight, along with my turn signals, brakelight, basically everything on the third 10 amp fuse from the right in the glove box. The bike still runs like a scalded cat but sure enough, the fuse is popped.

Fixed!: Found shorted wires at the speed sensor connector under the headlight.

KOTH: Devices on the same circuit (3rd from right) that can cause similar symptoms to above:

- Speed sensor
- Tach sensor
- Multi-function digital speedometer
- Horn
- Flasher
- Rear brake light-switch
- Front brake light-switch

Shorts and opens in the yellow-blue wire in the main wiring harness or the red wire on the other side of the connector in the device harness can cause erratic displays of the multi-function digital speedometer and a possible blown 10 amp fuse at the 3rd circuit from the right in the fuse box (labeled "horn, brakelight, speedo").

Common locations to look first:

- Rear brake light switch wire harness where it passes near the right exhaust pipe close to the rear brake master cylinder.
- Check crimps at the connectors to each of the devices listed above. The factory has a known

problem with connector installation QC.

Overheating:
Low coolant level in radiator
Poor quality coolant
Radiator fins clogged/damaged
Driving too slow or too high gear
Fan thermostat b/o
Poor quality fuel w/ hi-octane wire connected
Fan wire disconnected
Fan fuse blown
Radiator cap not holding pressure
Air in system
Water pump impeller shaft not moving/dis-engaged (ie:circlips missing)

cpmodem: My cooling system maintenance schedule:

- Flush cooling system on 950 Adventures ASAP.
- Replace the coolant and radiator cap every 2 years or 10,000 miles (whichever comes first) along with a proper system flush.
- Replace all hoses and clamps every 4 years or 40,000 miles (whichever comes first).
- Replace thermostsat every 5 years or 50,000 miles (whichever comes first).

Note: Use distilled water as a minimum (de-ionized is the best) if you mix your own coolant or have to add on the road.
Note2: The above miles/years are maximums and may need to be decreased in case of extreme conditions (ie: garaged in smoggy or otherwise high ozone environments). In any case, a visual inspection (including coolant testing) should be made at every oil change.

crwmac: In my experience with two 950's it is not uncommon for the radiator cap, even a new one, not to allow coolant to be sucked back into the radiator as the radiator cools. What is happening in lieu of that is that the radiator hose on the left side collapses as the coolant cools, contracts, and creates suction. As the coolant heats back up to operating temp and expands, the hose expands again to accommodate.
You can check to see if this is what is happening. When the bike is cold (let it sit overnight) take the left side cover off and see if the hose is collapsed. An additional check is to see if you get a swoosh of suction when you remove the radiator cap. If this is the case, I would try yet another cap.
Apparently there is not much difference between the negative pressure required to collapse the hose and the pressure required to suck coolant out of the reservoir. If the cap requires a little more negative pressure than needed to collapse the hose, then you get a collapsed hose. You could probably continue to operate that way as you suggest but I don't know what affect that will have on the hose in the long run. I suppose that would weaken it. Regardless, that's just not the way it is supposed to work.
I ride in the very HOT conditions of Texas (and Mexico, and New Mexico, and Colorado, and Utah) :-). I have found that after a coolant change, done by the book with the front end raised, you will still have a bit of air in the system. This bit of air doesn't cause much of a noticeable issue until you are in the worst of hot conditions, say 90+ degrees F in desert sand. I have found that burping the cooling system twice does the trick. I fill the coolant by the book and ride around for awhile to get the bike heated up with the fan cycling. Then I come home, let her cool off, and raise the

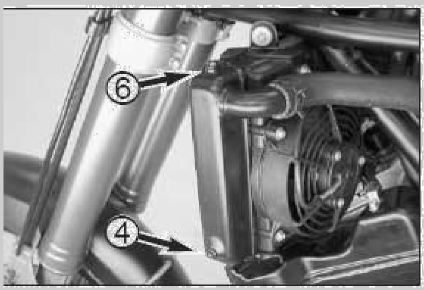
front end for another burp at the radiator bleed screw and cap. I always find a blub of air in there on the second burp. *Without* the second burp, I can count on seeing six bars in the desert. *With* the second burp, I never see more than five bars. I suspect that riders in cooler climates never noitice the difference.

I too was considering how to mount a second fan before I figured this out.

Hope this helps,

uk_mouse: The water pump is driven by the balance shaft. As the balance weights have to move in sync with the pistons, the balance shaft has to rotate at the same speed as the crank. So pump RPM = crank RPM. 20 psi is about right, the radiator cap says "1.4 bar" on the top.

KOTH: Bleeding (burping) the Cooling System:



NOTE: to completely bleed the cooling system, the motorcycle must be raised approx. 50 cm in the front - see Technical Information.

- Unscrew the bleeder screws on the water pump ❺ and the radiators ❻ until cooling liquid runs out without bubbles, tighten the screws again, close the radiator cap.

! CAUTION !

- ONLY USE HIGH-GRADE ANTIFREEZE (E.G. MOTOREX ANTIFREEZE) TO AVOID THE RISK OF CORROSION AND FOAMING.
- USE DISTILLED WATER TO PREVENT CALCIFICATION, ESPECIALLY OF THE RADIATOR CAP AND THE ASSOCIATED, PREMATURE PRESSURE RELEASE.

- Lower the motorcycle again, Start the engine and allow to run warm until the radiator fan switches on.
- Allow the cooling system to cool down and add more coolant if necessary.

BobbyC: Alternative burping method - "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."

Water pump tube alignment:

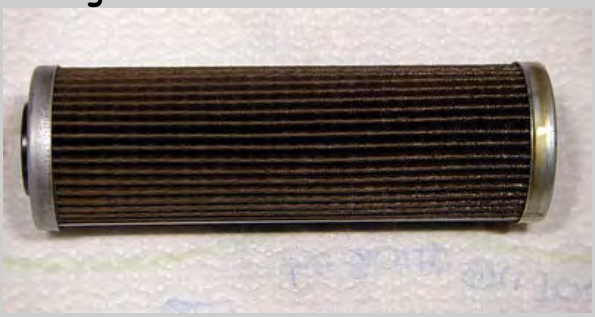
Louge: I've replaced O rings twice in 2500 miles. The second time I packed the area between the O rings with waterproof lithium grease. The grease was held under compression and worked for awhile

before the familiar drip reappeared.
I was about to replace them again when I noticed the angle on the tube didn't align with the water pump body. All of the O ring's tolerance is consumed due to poor alignment. The full story is here:http://www.advrider.com/forums/showthread.php?t=138475

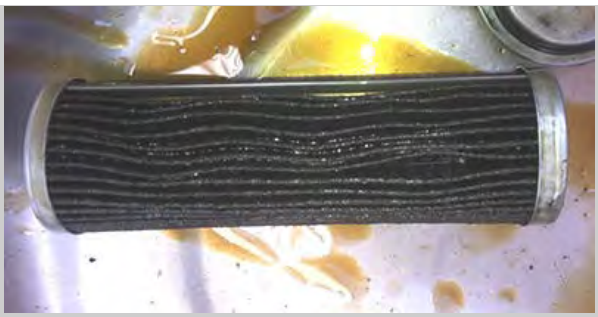
Water Pump Rebuild Tips:
HellsAlien:
1) suggest you drain the engine sump, pull the sump screen, then proceed with bike on sidestand. You wont get enuff drainage to matter, half-qt depending how long bikes been sitting around. Drain coolant first.
2) Suggest you not use lube on the OD. Heat the case and chill the brgs, work fast and they will drop in OK. Antiseize will only transfer heat and mess up this effort. Remember the snap ring between the brgs!
3) I don't recc dielectric grease; its for electrical connectors. I used wheel brg grease with good results so far. More important is to get a wrap of tape over the sharp end of the shaft exactly right so you dont cut the seal lip. Position the tape so it just covers the sharp edge. If too long it will stay under the seal & tear off when you pull the tape. (ed. teflon plummer's tape works well)
4) No. Better to have a spare shaft snap ring, they can get mangled depending on your expertise removing shaft & old seal.
5) Use a good fitting tool for driving the new seal in straight or use a press, preferred. The new seal may need some antiseize to help it go in the bore, is kinda tight fit. Have fun!

Speedzter: Changed mine at 29000kms, but was showing small coolant usage for the last 6000km or so. The shaft was lightly worn, and the seal had also worn, and had some black granular sediment trapped between the inner and outer lip. A tell tale sign was water/oil sludge around the front carby. No sludge on clutch cover. I think mine lasted as long because it had a coolant change very early on due to a pump cover leak. The dealer reported there was a lot of junk in the coolant when they drained it . I think they will last longer once the coolant is free of residue.

KOTH: The image below is of a normal used oil filter after 5000 miles in an engine with no coolant leaking into the oil:



The image below is of a used oil filter from an engine with coolant leaking into the oil.This filter was blocking enough oil from passing that the cam tensioners were slacking off, and the cam chains were making noise when the oil was hot. Major engine damage was immanent, if not, had already occurred Notice the wavy pleats:



Note:An oil pressure gauge would have warned of this situation long before pressure had dropped enough to hear the cam chains rattle and damage to have occurred. A Scotts stainless steel oil filter would have prevented a coolant swollen filter from causing oil pressure to drop in the first place.

Note2: Coolant isn't the only thing that can cause a swollen paper filter element. I have seen an overly rich carburetor (float set way too high) block a paper element in the same way. Try to determine the cause of the swollen filter before changing out the waterpump. Loss of coolant will be the first indication, but a leaking head gasket or inner clutch cover gasket can also allow coolant into the oil. Does the oil have a sweet smell? Does it smell of fuel? It could even be contaminated from deep water crossings. However, if its been 20k since your last pump rebuild chances are that's the cause.

Blown Head Gasket:

KOTH: The head gasket performs several functions besides sealing the high pressure combustion gasses in the combustion chamber/cylinder.

1. It seals the coolant passages as they pass from the cylinder into/out of the head.
2. It seals the oil passages as they pass from the cylinder into/out of the head.
3. It seals the camchain tunnel between the head and the cylinder.

A "blown" head gasket (especially if caused by loose head nuts) can result in a number of "seemingly" un-related symptoms (signs). Overheating is not usually a symptom (but sometimes shows up later as a secondary sign, usually due to low coolant level or an air bubble).

1. High pressure combustion gases can enter the cooling system and force coolant past the radiator cap and into and overflowing the expansion tank.
2. The seal between the oil passages and the coolant passages can become compromised causing oil and coolant contamination and possible loss of (or low) oil pressure.
3. The camchain tunnel seal can be compromised allowing:
    - Combustion gases to pressurize the crankcase.
    - Coolant to enter the crankcase and contaminate the oil.

Super Enduro Losing Coolant:

galbo950: This may seem stupid, but check the radiator cap. There is a piece of hose that joins the overflow bottle to the top of the radiator cap. On top of the radiator cap there is a swivel connector that the hose slides over, after a while the swivel piece becomes loose in the cap and it slowly drains the overflow bottle. Mine did the same and I couldn't see where it was leaking coolant until I went out and wiggled the swivel piece, when I did this I noticed that coolant was slowly leaking out and then it evaporates as it hits the header pipe leaving no real sign, mine would drain probably 1/4 of the bottle with each ride. Its been an issue on the SE, they replaced mine under warranty. I recall that a few other people on this sight where having the same drama and a few did a couple of mods to where the swivel piece joins into the radiator cap.

Oil leaks:
cpmodem: The oil pressure switch is one possibility, however oil leaks can come from many places. It is not always easy to determine the source as air currents many times will force oil to flow far away from their source. A very easy way to find the source of leaks is with a UV dye kit. I have used one to find some very difficult leaks that defied all other methods. The kits are available at most auto parts retailers.

Do you have a UniFilter pre-filter?
Under certain conditions, excess oil in the UniFilter will migrate from the filter and run along the edge of airbox, where the top and bottom meet,and drip down the left side of the engine when the bike is on the sidestand, Eventually dripping down in the area of the sidestand. This sometimes looks suspiciously like a leaky neutral switch seal.

Oil usage:
KOTF: The official KTM spec that must be exceeded before they consider an engine is using excess oil is .5L/1000 km. See Technical Bulletin 0508 for more info. If a bad head gasket or worn rings is to be determined, it must be done with a leakdown test. Be sure to replace the balance shaft oil seal before digging into the engine too deeply. This is a common problem with all years of LC8s.

cpmodem: If a leakdown test indicates that the rings are not sealing, there are a few measurements that you should make before simply installing new rings and bolting it all back together. You must also, make sure the cylinder is not worn. A check of ring gap is the first step. If the gap is too wide (more than .50mm) when inserted 10mm from the top of the cylinder, the cylinders need to be measured mid bore to determine if the cylinders need to be replaced.

Size I . . . . . .100.000 mm – 100.012 mm
Size II . . . . . .100.013 mm – 100.025 mm
Cylinder distortion . . . . . .max. 0.05 mm

If replacing the cylinders, I would also replace the pistons. But check them anyways (even if the cylinders are in spec), as they may be worn beyond their useful life.

Size I – 9 mm (from lower edge) . . . . . .99.953 mm – 99.967 mm
Size II – 9 mm (from lower edge) . . . . . .99.963 mm – 99.977 mm . . . .99.930 mm
Mounting clearance . . . . . .0.04 mm – 0.06 mm . . . . . .0.10 mm

If the cylinders are in spec and the pistons within the .10mm wear spec you can get away with new rings. I would still have a "qualified" motorcycle machine shop "break the oil glaze" with the proper tools and using the proper procedures/techniques. Otherwise you stand a good chance of spending all your hard earned money and time and still having an oil burner. The Nicasil plating on the cylinder bores is extremely hard, and very thin (.003" - .005"). It cannot be machined properly without special tools and expertise. I recommend you not try to "recondition" the bores yourselves. Leave this to the professionals. A new cylinder is $400.

Measuring Oil Level:
Owner's Manual Adventures: Check the engine oil level when the engine is warm (at least 4 bars on

the
temperature indicator light up). Allow the warm engine to run idle for approx. 1 minute and motorcycle place the motorcycle on a level surface (not on the side stand).
Turn off the engine, unscrew the oil dipstick and wipe off with a cloth.
Screw the oil dipstick all the way back in and back out again.
The oil level should fall between the lower end of the oil dipstick (MIN) and the MAX mark.
The oil capacity between the MIN and MAX mark is 0.5 liters (0.13 USgal).
Add more engine oil if necessary and check the engine for leakage.

Owner's Manual Super Enduros: Check the engine oil level when the engine is warm (at least 4 bars on the temperature indicator light up). Allow the warm engine to run idle for approx. 1 minute and place the motorcycle on a level surface (not on the side stand).
The oil level should be between the MIN and MAX marks, add engine oil if necessary.
Always check the oil level when the engine is warm. A cold engine can distort the measuring results. Engine oil expands when heated, increasing the oil level.

9nine0: I think that we place too much importance on getting the oil level at an exact point in the sight tube. The oil level only needs to be between the min and max marks on the sight tube. It does not have to be exactly at the full mark nor would you want to run the oil level at this mark.
When I instructed the KTM dealers in the LC8 training classes at KTM NA, it was stressed that the oil level should be between the min and max and never at the max level.
Think of it like max tyre pressure.....
Also the LC8 engine has 2 seperate oil pumps, one that pulls from the tank and pushes it through the engine and the other that pulls from the engine and pushes it back into the oil tank. These pumps share a common shaft but they pump at different rates due to thier size difference.
Depending on when you turn the key off, your oil may be at a different level even though there is the same amount of oil in the system. If the level is lower, it just means that the engine is holding the difference in oil.

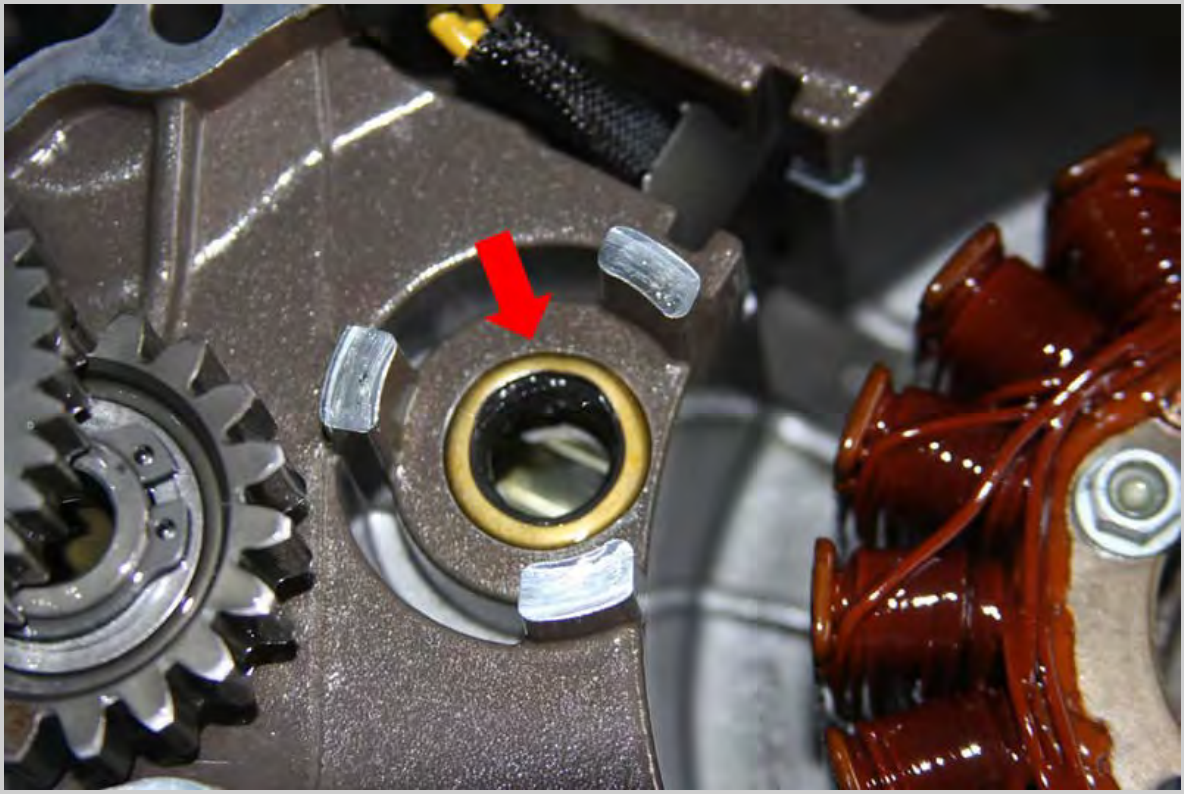
KOTH: The same principle applies to the Adventure series with their oil dip sticks. The oil level being measured is simply the level of oil in the storage tank and has no effect (as long as it is not empty or over full) on the amount of oil in the engine. Just keep the level between the min and max marks.

Pressure in the oil tank and crankcase:
cpmodem: The oil tank gets a lot of air pressure from the scavenger pump as it does it's job. It draws about 1/2 oil and 1/2 air from the engine sump and pushes it up through a tube to the right side of the oil tank. Right below the dipstick/fill opening. There are two rubber tubes (one on each side of the top of the oil tank) that vent the oil tank to the front cylinder's valve cover. Pressure is thus conducted down the camchain channel to the crankcase to make up for the vacuum the scavenger pump is trying to draw. Any remaining pressure in there (shouldn't be much if the rings are seated properly) travels out the vent hose in the Ignition Rotor cover and into the top of the airbox. There will be air movement to some degree in both directions as the pistons move up and down in their bores, increasing and decreasing the air volume of the crankcase with each stroke.

A restriction anywhere in the vent tubes can cause the oil tank to become pressurized. Should be fairly easy to isolate which one is the culprit by blowing into each one until the obstruction is found. Same with the valve in the crankcase vent line to the airbox.

evilkymevil: After putting in a new balance shaft seal which sits in the generater cover.
I put a catch bottle on my crankcase breather and went for a 120 km ride .
Normally it would dump approx 60 ml of oil.
It didnt spit out any oil.
This is a huge relief as it is only a $ 7 seal.
This seems to have solved my oil loss problem.
You inmates with a similar problem should try this first before stripping down the barrels for new rings. As i was so close to doing this.
If you remove the crankcase screw on the generater cover and run the motor the amount of oil vapor coming out is lots.
This seal is directly above this screw. So if its no longer sealing it will be forced into the crankcase breather and into your front carby and start dribbling down your motor.

WOTF:
Balance shaft seal: 0760122050 ~$9USD
Ignition Cover gasket: 60030040100 ~$25USD



Oil Filters:
KOTH: The choices are basically paper or stainless steel mesh. The tightest bearing clearance in the LC8 is .040mm which is 40 microns. BTW, a paper filter is rated in average particle size. Most will pass much larger sized particles than the rating (over 300 microns in some cases). The Scotts will stop all particles 35 micron or larger. I prefer the Scotts for this reason and for its resistance (imperviousness) to gas and water/coolant contamination which can be critical in the LC8 due to its design.

Hard Shifting:
Oil viscosity too thick
Worn out oil
Loose shift lever
Clutch lever out of adjustment

Bad clutch slave
Air in clutch fluid
Clogged clutch oil jet
Worn/wrong clutch pushrod
Clutch Booster worn
Warped clutch plates
Worn clutch basket
Worn shift drum
Loose clutch inner basket nut (32mm)

Speaking of loose shift levers:
Mortimersickle: I don't know whether you have already covered this, but a couple of times now, I have seen posts on Advrider.com saying to use Loctite 648 on the little bolt that holds on the shift lever. The parts manual does specify 648 in the picture with the lever, but I believe it is an error. The list of torque specs in the service manual calls for Loctite 243 for the same bolt. I believe this is correct. Loctite 648 would probably cause the bolt to break upon removal unless first heated. Loctite's website specifies 250C heat to remove, which might be too much to use in this situation.
http://www.advrider.com/forums/showp...6&postcount=11
Maybe people should be cautioned about this probable mistake in the parts book?

cpmodem: Have you tried adjusting the clutch lever farther from the grip? There's about 1 1/2" of difference between min and max. You might not have enough travel to fully disengage your clutch. Sometimes its the simple things that need to be tried first.

WOTH: Many reasons for clutch drag have been proposed over the years, but one theme seems to be prevalent in the majority of the reports. Oil (or rather lack of it) to the clutch interior. The purpose of the clutch oil jet is to regulate the quantity of oil that gets to the clutch plates, and indirectly to the clutch booster surfaces. The sniggle here is that it appears that, under certain operating conditions, once the clutch is deprived of oil for awhile (ie: a blocked oil jet), the plates and/or other internal surfaces of the clutch and booster assembly become damaged to the point of exhibiting shifting problem. Even after oil flow is restored. In that case, replacement of the worn parts is needed to restore the clutch's smooth action. BTW, the clutch oil jet is listed in the "Scheduled Maintenance" to be removed and cleaned every 15,000 km. Doing this every oil change is an even better idea, especially if your clutch gets hard use.

KOTH: The clutch is lubricated with oil from the same passage as the transmission. After the crankshaft, pistons, rods, camchain, cams, and transmission gears and bearings are lubed, what's left goes to the interior of the wet clutch via the clutch oil restriction jet and through the pushrod passage to the interior of the clutch inner hub. Some of the oil in the inner hub is used to lubricate the sliding surfaces of the clutch booster. The remaining oil then flows through holes in the inner hub to lubricate the friction disks and the sliding surfaces of the clutch. After which the oil is flung out of the clutch to drain into the oil sump for pickup and return to the oil tank by the oil scavenger pump.

The clutch oil jet (located beneath a screw plug near the countershaft sprocket and clutch slave cylinder on the left side of the bike) size is selected to provide just the right amount of oil to the clutch. Too small a jet size and the clutch will not be lubed adequately, resulting in rough shifting and eventually worn clutch parts. Too large a jet and the clutch will be over lubed resulting in some of the same symptoms as under-lubing, plus a lowering of system oil pressure and accumulation of crankcase oil (overwhelming the scavenger pump) at idle speed.

The clutch also gets lubed with oil from the transmission via the mainshaft and countershaft roller

bearings and to a degree from oil thrown off the counter balancer gear and pinion gear. The clutch also runs in whatever oil is pooled in the sump.

Originally, apparently it was decided that that was enough oil for the clutch for its intended use. After the first season of racing, it was obvious that it was not enough for racing conditions. The Rallye bikes were having clutch problems. Amongst other things, Feliciani (Meoni's mech) and others were putting larger and larger jets inplace of the plug to help lube the clutch better from the inside (via the pushrod passage).

In July of 2003, KTM started installing a small jet .30mm P/N 60038029200. This was supposed to be retrofitted to all previous models in a Tech Bulletin (0309/38/01-E) issued in September of that year

The Mattighofen engineers were reluctant to install an oil jet at first, but they allowed for one in the design.The oil jet selected for the 950/990 Adventure is a compromise based on the assumption that the bike will be used mainly on the street and gravel/dirt roads. If the bike is used hard (ie: slipping the clutch to manuver tight trails or get through rough terrain or deep sand, or racing conditions) the clutch jet size should be increased (.40 - .50mm) and possibly some modifications to the inner clutch hub made (AKA the Feliciani Mods) to accomodate the extra abuse. Don't go too big; unless you're racing the bike, the 1.0 mm size Feliciani talks about for desert racing is too big for non-racing use. Be advised that some "streetability" may be compromised even with the .40-.50mm sizes (ie: hard to find neutral, clunky shifting at slow speed, etc.). Best to start small and work your way up. Have a spare .30mm so you can go back down when you get too big.

emelgee: ... it looks like the KTM OEM jet is the same type as the Dellorto 6413. A quick ebay search pulls up a seller offering sizes from 53 upto 172 at £2.99 each.

Moraflex: I was up on twisties this weekend and the bike only has 4800 miles on it. At the end of the 120 mile ride I noticed the up shifting took on a slightly different feel, in that it took two clicks to upshift one gear. Normally it's only one click. I took out the jet and sure enough, clogged! Blowing into the jet did not unclog it so I needed something else. I didn't happen to have a .010" wire laying around, but I did have two .005" wires which I twisted into a pair and that unclogged the hole. Took it for a test ride and it shifts in one click.

In the future, I will buy a High "E" .008" or .010" guitar string to poke out the hole without removing the jet. Turns it into a 10 minute job to be preformed every other month.

Why a guitar string you ask? Spring steel, wont break off and available everywhere.

Swashplate: 2005 with 22K miles, fresh oil change, jet is clear.
Symptoms: bike tries to move fwd in small surges @ stoplight/sign
hard to downshift (sometimes) while bike is in motion from 4th to 3rd to 2nd to 1st (upshifing is fine)

Settings:
Clutch in
In first gear.
RPM @ 1500ish

The Fix: Replaced the inner steel disk that mates with the bellville spring. It had a groove worn in it from the bellville spring. BTW, the bellville spring goes cone out, and the steel plates need to be

installed with their rounded edges in. The outer friction disk has a different surface designed to work with the aluminum pressure plate. The inner friction disk has a larger inner diameter. Pay attention to the Repair Manual, and assemble the clutch EXACTLY as it describe

Pyndon: Early 950 clutch basket (the type with a metal band) upgrade/replacement. Read the post on ADV.

Putting the Adventure Up On the Center Stand:

mcmann: I re-activated my 950 Adventure centerstand demo video (from last winter),for newbies with 990's:
Make sure you have thick soled boots so you can push down hard on the centerstand, lift with the rear grab rail, and use momentum. I exagerated the momentum in the try III lift. My 950 had the 19" front & 17" rear wheels on for this demo . . . should be similar to the 990? Yes, a 950S or 990s centerstand would be more difficult.

If you are having trouble deploying the center stand on your Adventure, it is possible that your bike has:

- Smaller wheels than stock
- Sagging or poorly adjusted suspension
- Wrong center stand for your bike

These are the centerstands manufactured for the various models of Adventure;

- 2003-2004 "S" Model - 6000302200030 = 379mm
- 2003-2004 Standard - 60003022144 = 346mm
- 2005-2010 Standard - 6000302240030 = 333mm
- 2005 "S" Model - 6000302230030 = 359mm
- 2006 "S" Model - 5750302210030 = 378mm
- 2007-2008 "S" Model - 6000302200030 = 379mm
- 2009-2010 "R" Model - 6000302200030 = 379mm

These are the sidestands:

- **2003-2004 "S" Model - 60003023000 = 349mm**
- **2003-2004 Standard - 60003023100 = 319mm**
- **2005 Standard - 6000302330030 = 302mm**
- **2006-2011 Standard - 6010302310030 = 302mm**
- **2005 "S" Model - 60003023100 = 319mm**
- **2006-2008 "S" Model - 6010302320030 = 349mm**
- **2009-2011 "R" Model - 6010302320030 = 349mm**

Exhaust Pipes:
ElChico: At 31,300 miles the front exhaust on my 950 has snapped off/burnt through, thought you might like a laugh at the image - will try and up-load. Doesn't seem to let me attach the image...
The pipe has burnt through just before the first connector where the balancer pipe is.
The bike is 04 buit - 05 registered. And because I took over servicing - in order to ensure it was done properly, it isn't covered by warranty.
The pipe is ordered: £137 + they changed the shape in 05 - can't get the 03-05 shape, so need a new heat shield piece at £45.25. + gasket £2.39 + graphite ring - goes into the connector £5.36. (For US $ just x by 2).
Stripped the pipe off today and it was easy, I was concerned that the exhaust studs would shear off - a la Jap bikes.. but no prob's, one nut undid and one stud unscrewed. So I'm ready to fit the new one, hope it lasts a bit better 'eh.
If you're bike is under warranty and you have actually ridden it you might be sensible having a good check for cracks etc.
Cheers

Don't be tempted to wrap the exhaust pipes with anything. The wrap will hold the heat in and cause the pipes to fail early. Check out this thread on ADVRider.

Euro Headlight (60014001000):

Below Image by Geek:

no_bmw_for_me:
1. Is the High Beam H3 or H7?
H3

2. Are the low and high beams on together, when the high beam is turned on?
Both together.

3, Is the high beam bulb the higher or the lower bulb in the housing?
Upper bulb is the high beam

Paochow: The Euro switch (60011074000) is a direct plug in as well. I repinned a few of my wires however..

Euro Switch standard...
1. Lights off-Brake light when actuated only
2. Parking light/Tailight only-Brake light when actuated
3. Headlight/Tailight-Brake light when actuated

Repinned Switch...
1. Lights off-Brake light when actuated only
2. Headlight/Tailight-Brake light when actuated
3. Headlight/Tailight and Aux lights-Brake light when actuated

I really didn't see the point of having the parking light running only, so the way I set it up I didn't need to mount an aux switch. Also the way it is set up I can run HID low beam/Aux lights and use the high beam to flash, when people seem to think my lights are to bright

Gobi Luggage:
Installation Instructions

Lil' Irv: Follow this link for a step by step tutorial for re-keying the locks on your Gobi luggage.

North American Warranty:
BillWatt: Letter from KTM North America:
You are correct, the USA model 07 990 ADV has a 12 month 12,000 mile warranty and the 08 model has a 24 month 24,000 mile warranty regardless of where you live.
Thank you,
Name and email withheld as requested
KTM North America Customer Service Manager

Magnuson-Moss Warranty Act (USA only)

Bike Colors:

302001	TUPFLACK SET 30 G JADE-ORANGE
302090	TUPFLACK SILBER 30G
304603	TUPFLACK LC8 BLUE
304604	TUPFLACK ORANGE
304605	TUPFLACK BLACK

Things to check before your warranty is up:

Frame for cracks (especially around centerstand pivot)
- Engine block for cracks (especially where sidestand bolts up)
- Exhaust system for cracks (especially front head pipe)
- Check sidestend safety switch
- Front and Rear brake switches
- Check clutch safety switch
- Fuel tanks for leaks and proper operation of low fuel sensor
- Timing chain for slack (do the tensiorer preload test)
- Cylinder heads for leaks (do a leakdown test)
- Cams and buckets for wear (look for spauling and pitting)
- Clutch basket and clutch booster for wear
- Clutch m/c and slave for leaks
- Freewheel for wear
- Check torque limiter on '05-'06's (If it's "klacking" at all/anytime)
- Have a professional oil analysis done to check for bearing and gear wear
- Check brake rotors for cracks and warpage
- Check for bent or cracked rims, corroded spoke nipples, spokes
- Check for oil leaks (especially pressure switch, cylinders, filter covers, oil lines, and crankcase vent in airbox)
- Check fuel pump (look for corrosion and pitting of points)
- Check for signs of waterpump seal leakage (may not be covered)
- Check steeringhead, wheel, and swingarm beerings (may not be covered)
- All TSB's appropriate to your model year done. For example: '04: stator bolt loctite, cylinder head nuts/washers

MISC:

cmwoody: clutch disks off a KLR250/ZX10 fit... Or a rear brake rotor off a F650 fits. Or a Smoothbore CR needle fits in the Carbs Or Kawasaki ATV idle jets fit in there, or Minibike main jets are our airjets Or Aprilia V60/HD V-Rod valve shims fit in our bikes. Or Aprilia countershaft sprockets fit up with a slight modification.

gefr: clutch slave cylinder o-rings: outside diameter 27mm, thickness 1,7mm to 1,8 mm.
Fiber disks from klx 125/250 are same
Steel discs are same in Suzuki GSXR 600 '07/'08 and GSXR 750 '05/'06.

uk_mouse: .75 clutch oil jet: It's actually a Honda part (99101-GCG0750)

Atreyou: Voltage rectifier/regulator from a Yamaha 660R Raptor Quad is compatable with 950/990.

Chuckracer: Need a sparkplug socket? Go to your nearest Yamaha dealer and order: P/N: 5TA-2814F-00-00

pops: The o rings for the fuel inlet elbows on the 950 carburetors:They are 1.3mm-6.3mm. from OnlineOrings.com
It took a few weeks but i saved around $260.00 by not buying the complete gasket set from KTM Australia

NothingClever: The OEM 950 pump is the same as used on the Kawasaki 2510 Mule. It's a plug-n-play option that doesn't require any plumbing adjustments. And as could be expected, Kawasaki asks $135.88 which is significantly less than what KTM asks. Kawasaki p/n is 49040-1055.

Model year differences:

KOTH: The following differences between model years are related to the actual year of manufacture of the bike, not the year on the registration. KTM's model year runs from June to May. For example, A true 2004 bike was manufactured between June 1, 2003 and May 31, 2004. A true 2005 bike between June 1, 2004 and May 31, 2005, etc, etc. There are were a few instances when bikes with even earlier build dates were shipped as later year models. Whether this was due to an effort to clean out inventory or a need to meet production demands, the latest updates should have been done before they left the Factory. Still, it behooves the owner of such a bike to carefully go over it to make sure all pertinent Tech Bulletins have been taken care of.

The bikes are registered in their destination countries as the year they are delivered to the dealer. I don't know how other countries do it, but KTMNA has been known to keep bikes in their warehouse for six months and release them to the dealers after the start of the New Year. So just cuz your bike's registration says you have an '04, '05, '06, '07, etc. Doesn't necessarily mean you do. Many of the differences listed below are visible upon close examination of your bike. That and the build date from the KTM Dealer-Net are the surest way to tell the actual year of your Katoom. The designation XXXX.5 is not used in KTM's documentation to denote actual year of build, so look for yourself, if you really want to know (important for certain maintenance and tech Bulletins).

Differences between 2003 and 2004 Adventures (USA) (6/03-5/04):

Added black bikes and blue bikes to the line up (1/04-5/04)
Black wheels (1/04-5/04)
Color matched front fender (1/04-5/04)
Different fork legs
Different rear shock
Added carb vents to the canister system
New oil tank
New fuel pump
New crankshaft and rods
New cylinders
New oil pressure switch
New pulse generator
New ignition rotor
New clutch pushrod (600.32.054.100)
New outer clutch hub

Differences between 2004 and 2005 Adventures (USA) (6/04-5/05):

New chain slider on frame
Lower center stand and shorter sidestand (1/05-5/05)
Shorter front brake hose (1/05-5/05)
New swingarm pivot bolt
New front exhaust header (1/05-5/05)
New heat shield for front exhaust (1/05-5/05)
New fuel tank fill flanges
Carb de-icers
Lower suspension front and rear (different forks and rear shock) (1/05-5/05)
New seat (1/05-5/05)
New speedometer (1/05-5/05)
Wider rear wheel: 4.25" wide (Up from 4") (1/05-5/05)

New rear brake caliper pistons
Splash guard under triple clamp area of frame
Splash guards on sides of triple clamp area of frame
New fan shroud (directs air away from rider)
Added a Torque limiter to the starting system (1/05-5/05)
Redesigned engine case with added cylinder oil injectors(2) (1/05-5/05)
New front sprocket chain protector
Added a main bearing retainer plate (1/05-5/05)
Added a 2nd vacuum valve to the canister system
New balancer shaft with 2 piece timing gear (1/05-5/05)
New cylinders (1/05-5/05)
New exhaust valves (1/05-5/05)
New valve buckets (intake and exhaust) (1/05-5/05)
New head nuts and added washers
New oil dipstick (10mm longer) (1/05-5/05)
New oil tank ball valve
New ECU
Added a rollover sensor
Added crankcase vent back pressure valve (1/05-5/05)
New clutch pushrod (600.32.054.300) (1/05-5/05)

Differences between 2005 and 2006 Adventures (USA) (6/05-5/06):
New steering head bearings
New frame
New swingarm
New "H" pipe clamps
New glovebox interior
New rear hub
New speedo sensor and cable
New clutch cover
New crankshaft and connecting rods
New shift drum
New clutch pushrod (600.32.054.400)

Differences between 2006 and 2007 Adventures (USA) (6/06-5/07):
Added a Dakar paint scheme to the blue "S" model
998 cc engine (2007 Super Duke Engine)
Fuel injection
New wiring harness
ABS brakes (non "S" models)
*New waterpump seal (PTFE)
*New waterpump shaft (nitride coated)
*New re-designed torque limiter, idler gear and ignition cover
*New forks
*New triple clamps
*New frame
*Silver subframe
*New plastic engine protectors
*New lower tank mount
*Silver passenger footrest brackets
*New rear shock

*New silencer with 3-way CAT
New fuel tanks with internal HP pump
*Added thermal foil protection on plastic parts
*New front and rear rims
New floating brake rotors front and rear
*New rear brake cylinder
*Added an electric solenoid to the evaporative canister system
*New clutch slave cylinder
*Silver foot brake and shift levers
Added LC4 foot brake lever stop
New horn
*New front fender (more clearance from tire)
New battery charging terminals (accessible from right side)
Torx head fittings replace many small hex head screws

*= New for 2007 (non-asterisk is 2006 EURO/UK/AUS 990)

Differences between 2007 and 2008 Adventures (USA) (6/07-5/08):
New forks
New rear shock
New ECU (Timing Charger EFI)
New ABS module and brake hoses
New water pump rotor (thicker)
New water pump shaft (longer)
New handlebar
New inner clutch cover
New clutch slave cylinder
New oil tank
New fuel hose

Differences between 2008 and 2009 Adventures (USA) (6/08-5/09):
First year for the white (ABS)
First year for the "R" Black and white with orange frame (non-ABS long & travel suspension)
New pistons (2008 Super Duke pistons)
New camshafts (2007 Super Duke cams)
Increased horsepower ratings (106hp for ABS and 115hp for "R")
New wiring harness
New ignition lock with immobilizer
New water pump cover
New instrument panel
Black forks
New Black swingarm
Emergency flashers
New design tanktop storage box

Differences between 2009 and 2010 Adventures (USA) (6/09-5/10):
New oil pump pressure regulator
New skid plate and skid plate/fuel tank mount
New silencers

New forks
New rear shock absorber (mono shock)
New MFSD (speedometer)

Differences between 2010 and 2011 Adventures (USA) (6/10-5/11):
Added "Dakar" model (blue, ABS, 210mm suspension, 115hp engine)
Reduced suspension travel on the "R" model by 17mm

Adventure Suspension Travel:
2003-04: 9.0" (230mm) - "S" 10.4" (265mm)
2005-06: 8.3" (210mm) - "S" 9.65" (245mm)
2007-08: 8.3" (210mm) - "S" 10.4" (265mm)
2009-10: 8.3" (210mm) - "R" 10.4" (265mm)
2011: 8.3" (210mm) - "R" 9.65" (245mm)

Adventure Seat Height:
2003-04: 34.6" (880mm) - "S" 36.0" (915mm)
2005-06: 33.8" (860mm) - "S" 35.2" (895mm)
2007-08: 33.8" (860mm) - "S" 36.0" (915mm)
2009-11: 33.8" (860mm) - "R" 36.0" (915mm)
2011: 34.65" (880mm) - "R" 35.63" (905mm)

July 2002 Motorcyclist Article on the KTM 950 Adventure (17MB pdf)

Conversions:
KOTH: Here are some useful conversions
Inch/pounds to Newton-meters, multiply by .113
Newton-meters to inch-pounds, divide by .113
Foot-pounds to Newton-meters, divide by .737
Newton-meters to foot-pounds, multiply by .737

Inches to mm, divide by .039
mm to inches, divide by 25.4

mpg to km/l, multiply by .425
km/l to mpg, 235.2 divided by km/l

Just about any other conversion you can think of:
Statman.info

Wire gauge and current info

Gearing Commander

Subject Index:

NOTE: If you don't see your subject in the index use the search function of your browser (usually ctrl+F for Windows users).

Just in case someone opines that the big Adventure isn't capable in the dirt:

Or on Pavement;

I submit that, just maybe, it's the rider who is not capable. The big Katoom is eminently capable in all respects.
Just Sayin'

KOTH: And for those of you concerned about over reving your new katoom befor the 600 miles in the Owners Manual has passed. Consider this. Every engine is fired up and run on a test stand before it leaves the the engine shop. They aren't dyno'd at this point, but they are run through their full RPM range to make sure the engine is sealed properly. later after they are mated with the chassis and the bike is totally assembled, it is warmed up and at least one full pull is made on the chassis dyno. The bikes are then wheeled out, all fluids drained, and crated for shipment. The video below is from a French moto magazine that toured the Matighoffen plant in 2008. Near the end you can see them rolling a 950 Super Enduro R out of the dyno room. And a few seconds later a couple of 990 Adventures are shown outside the dyno room with another leaving it.

Please bear with us as we build this site. Submissions to the HOW and suggestions/comments are always welcome:

webmaster ktm950.info (Please add the @ where appropriate)