

# Rotax engine problems – some words from other groups on the rotax engine.

# Clutch plates sticking

The clutch can cause problems (normally drag) if the bike is left standing for any length of time.

There are two problems:

- 1. sticking through standing idle free off the clutch by selecting a gear (2 or 3) and kicking over with clutch and rear brake on (up on main stand of course!).
- 2. poor adjustments, warped plates, dogears on clutch basket etc.

There's quite a lot of dismantling to do (timing belt, both pulleys (camshaft pulley may need a 2-bolt puller), belt housing and clutch cover) to get to the clutch. Don't forget the thin wire circlip on the kickstart shaft.

There is a special tool to hold the clutch whilst undoing the big nut, but it is possible to undo by locking the back wheel with the gearbox in top.

Clutch does run in engine oil.

# **Alternative Spark Plugs**

NGK Iridium IX . coded DR8EIX replaces the old D8EA plug.

These spark plugs are meant to give easier starting, give better power, better economy, and last longer. Available from Busters Motorcycle Accessories (www.busters-accessories.co.uk 08702 412040) via mail order.

Split fire plug part number SF416B using the .7mm gap. Splitfire plugs are available in the UK by mail order from M&P <a href="https://www.MandP.com">www.MandP.com</a>. Higher top speed and economy reported.

#### HT lead

HT leads are known to give problems. You do not need to replace the coil, the lead simply pulls / twists out.

#### Airbox/manifold.

The rubber connectors from engine to carb and carb to airbox can become split or porous. The airbox becomes brittle and often splits allowing air leaks causing starting/slow running problems.

Start the engine and squirt a little WD 40 or similar around the manifold. Listen for any change in engine note.

## Rotax cam belt change

Cut the old belt along its length, thus reducing its width by half, pull the "outside" half off, then fit the new belt, slide it on, still with the old "half" belt holding the toothed wheels in position, then when you have the new belt half on cut the remaining half of the old belt off. The only trouble with the above method is that you no longer have a spare belt.

## Setting the tensioner

Once the belt is fitted, set the tensioner by holding the belt on the same side of the belt as the tensioner and you should be able to turn the belt 90 degrees, no more, this gives the correct tension and the gap at the roller on the other run should be between 5 and 6 millimeters. Turn the engine over using the kickstart to make sure that you do not have slack in the side of the Belt opposite the tensioner, or the belt will loose its tension when you run the engine. **Camshaft pulley** 

When you do change the belt always check the top pulley as it made of alloy and can get a rough edge and strip the belt very quick after a change, just running a small file along the teeth to smooth them out should do it.

Apparently there were two types of pulley fitted to Rotax engines, the correct camshaft drive pulley (part no. ending in 23 instead of 22 to indicate it is made of aluminium alloy). The older ones ending in 22 were zinc alloy and used to come loose.

#### Service intervals

Oil and filter 6000km/4000 miles, use 15W 40. timing belt 2000km/8000 miles, valve clearances 6000km/4000miles. Spark plug 12,000km/8000 miles.

#### Oil

## **Checking Oil level**

The oil level should be checked about 30 - 45 seconds after the engine has been switched off. As it is dry sumped the level is read from the oil box in the frame. If the non-return valve is knackered the oil sinks down into the engine if left off for some time. When you fill up with oil you then end up with too much oil. You might want to check oil level when hot, just after turning off. Level may be too high. If you check again next morning and it has gone down then your non-return valve is stuck.

## Pressurizing the oil system

Fill with correct amount of oil then crack the 14mm nut on the oil line by the air separator and wait until you see some oil, this will shift the air and help the oil round faster. Fire it up and after about 15secs you will see the oil returning in the oil filler hole. If it don't return after 20secs stop the engine and crack that nut again. You will find that this way it will work 1st go 99% of the time.

Run it for a bit then top the oil off to the correct level.

The engine is a dry sump, just like the Triumph twins etc, except the oil is stored and cooled in the frame section instead of a tank.

Beware when you undo the oil drain at the base of the frame, it gets a gush on.

#### Pressurizing the oil system -easy method for electric start

Fill up with the correct amount of oil and leave oil filler cap off. Use kill switch to prevent ignition and or spark plug. Press starter button for a few seconds and look to see if oil is flowing in a good jet into oil tank/frame. Try a few more presses of the starter until good flow is seen. Put oil cap back on, enable ignition at kill switch and press starter button again using choke as necessary. Should fire up OK. Once running take oil filler cap off again and admire jet of re-circulating oil seen pouring into oil tank. If no oil jet to admire then you may need to do the getting rid or air lock thing, otherwise you're OK.

Don't put additives in the engine oil unless you want a slipping clutch.

# Oil burning

Symptoms - The bike smokes when first started but cleans up when its warm. But under stress, hard acceleration and engine breaking deceleration. There is a cloud. The bike

generally runs and pulls well.

The bore seems to last but valve re-grinds have been needed at fairly low milages. If the head has to come off for any reason it's worth checking valve sealing. The seals on the exhaust valves can also hardened and become brittle. Replace intake seals at the same time even if they still have some give in them.

The O ring in the head gasket can also give a problem low oil pressure and blue exhaust smoke.

### **Tuning modifications to Rotax engines**

The Rotax engine has been used extensively as a basis for Flat track racing in the US. The people to help are:

Woods: http://www.rotax.net/index.htm Sportax: http://www.sportaxracing.com

Fit a big bore version -- sleeve the bore and go up to 600 cc.

Fit a Hot cam - there are a number of alternative cams available.

860 - mile, half-mile, road race.

675 - short track/TT/MX

670 - short track/trailbike

Fit larger valves -- 36mm, 37.5mm, or 40mm inlet valves.

Open and Polish the ports.

Fit a larger inlet manifold

Fit a larger carburetor (40mm)

Fit a less restrictive exhaust

Fit a less restrictive air filter

Change the sprockets

#### Stage 1

Tuning for Rotax MZ Saxon (Woods)
Change exhaust
Fit K & N air filter.
Change cam
Change to 40mm dellorto carb
Change sprocket (16 tooth)
Change to offset 4.5° woodruffe key (ignition)

# Stage 2

Big bore kit Change to offset 4.5° woodruffe key (ignition) Port and polish head Change to larger valves

