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rmu1931

Joined: 27 Jun 2007
Posts: 9

Posted: Fri Jun 29, 2007 11:22 pm Post subject: 1930 Flyer Deluxe - engine tight

Hi Group,

i'm a new member to the group and own a 1930 Flying Squirrel Deluxe. Unfortunately the engine is tight. The crank is in appr. 90° and 270° after tdc position, but there is no movement at all. I filled very thin oil in the barrels that usually creeps inside, but no movement at all even after several weeks. Then i made a plug for the spark-plug hole but carrying a grease nipple i made the same one for the crank lubrication plug.

After that i was able to push this with a kind of hydraulic pressure. Espeacially with the barrels i was very cautious (only pressure on one at the time ;-) ...)

So far no results, no movement at all. Actually i did not use any hammer or similar barbarian tools, and i would rather like to avoid it unless i'm seriously encouraged to do so...

Do you have any hints how i can make it moving?

Thank you & Best Regards
Robert

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efr215

Joined: 06 Nov 2004
Posts: 215

Location: Leigh-on-sea, Essex

Posted: Sat Jun 30, 2007 9:41 pm Post subject:

As nobody else has had a go I'll put my twopenn'orth in. You must understand that I don't have the deep knowledge of the minutæ of Scott variations that many will have, what I do have is the experience of making a living in the engineering game. That said I'm guessing that this engine is a blind head, (non-detachable) type? I've looked at some pictures of the period but cannot tell for sure.

Presumably the problem is corrosion in the bores and probably some chemical reaction between the aluminium piston and the iron block. The trouble with oxides is that they are larger in volume than the original metal they replace and chemical reactions can effectively unite the surfaces. They are also gritty all of which leads to your problem.

Attempting to use hydraulic pressure, grease/oil in the combustion space runs the risk of putting undue strain on the connecting rod and/or crankpin so if this were to be attempted I would be inclined to remove the big end rollers at least until some movement is noted. Removing the rollers also has the advantage that it separates the cylinders to the extent of two roller diameters, which

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immediately halves the force needed to get something to move.

Heat and cold are useful allies, cold is in some ways easier to direct. To that end can you find a source of liquid nitrogen? A lot of university departments use it. It is used in a lot of processes, there are companies that use the stuff too but finding them is another matter. If you can source some then it can be poured into the piston through the crankcase doors. That will shrink the pistons like it is going out of style and get things moving with a bit of your hydraulics. "Cardice" solid CO2 is the next best thing and probably easier to obtain, a bit slower in action so there is more time for the block to cool too but the operation is the same.

Heating the whole block might be worth a try as a last resort; quietly smoking is about as far as you should go, say about 300°C any more will create a serious risk distortion. As it cools there is a reasonable chance that a thin oil will creep down the sides of the piston and the differential expansion rates will help break the mechanical/chemical "lock".

Another possibility but one that has its risks is that with the big-end rollers out would it not be possible to lift the block far enough to get some steel plate in the gap between the block and the crankcase? If it is then you have the basis of a puller with some studs and more substantial section steel with provision to use the spark plug holes as an attachment point. The danger is that you are putting a strain on the big-end pin that was not intended for it.

Of one thing I am sure and that is you are surely not the first with this problem and hopefully someone will be along with a proven method.

All I can add is "The Best of British Luck!"

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rmu1931

Joined: 27 Jun 2007

Posts: 9

Posted: Sat Jun 30, 2007 10:14 pm Post subject:

Thanks for your reply! And you are right, the head is non-detachable. I'll have a try with heat and cold as mentioned and i also have a resource for fluid nitrogen.
Is it possible to remove the big end rollers at any position of the crank? I did not try it yet. But you are certainly right, it makes good sense to do so. If the rollers are removed, it will also give the answer if the main bearings are stuck too, and which barrel (or both).
OK, I'll have aother try by tomorrow and will also try to add some pictures to the thread.
Rgds
Robert

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dave bushell

Joined: 09 Jun 2004

Posts: 231

Location: Caterham, Surrey

Posted: Sat Jun 30, 2007 10:49 pm Post subject:

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Hi Robert

Can't advise on moving pistons, but the big-end roller plate screws are only removable in one position on each side of the crank. With the crank case doors removed, you will see a half moon cut-out in the crankcase opening flanges and this is the position that the big-end screws must be removed in order for them to clear the crank-case without damaging it.

Without removing the screws you cannot remove the roller plates and therefore cannot extract the roller bearings.

Dave

Last edited by dave bushell on Sat Jun 30, 2007 10:51 pm; edited 1 time in total

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efr215

Joined: 06 Nov 2004

Posts: 215

Location: Leigh-on-sea, Essex

Posted: Sat Jun 30, 2007 10:51 pm Post subject:

Still 'ere!

The rollers should come out with a bit of careful levering on the outside of the con-rod big end and a decent magnet on the rollers. The first couple will be the worst as, if the bottom end is good, the slightest tipping of a roller will make it lock up. Oh! what fun!

If you have access to liquid nitrogen then I think I'd remove the rollers from one side, do the nitrogen trick on the other and if you get movement then reverse the process.

If it does not move, kick the cat, beat the wife, go down the pub and get drunk or have a good cry but avoid the heat if at all possible. Heat is far less likely to work, for one thing the achievable temperature differential is far less than you can get with the nitrogen, (what is nitrogen minus 170°C?), and the aluminium shrinking is far more likely to break the "lock" and let a lubricant in than any expansion with heat which at best might crush the corrosion or whatever it is that ails it.

And if you work out how to do pictures you can tell me!

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efr215

Joined: 06 Nov 2004

Posts: 215

Location: Leigh-on-sea, Essex

Posted: Sun Jul 01, 2007 9:03 am Post subject:

Dohh!

Dave Bushell is entirely correct, well spotted that man! I'd forgotten that important point despite having been tinkering inside my engine's big-ends within the last month.

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Wots a goldfish? Told you I knew nuffink! I've just trotted out to the shed to have another look at my DPY engine after that faux pas! Looking a twit just once a day is quite enough thank you . . . !

On the premise that the screws are less expensive and certainly easier to make than a cylinder block the answer would be to cut/grind enough of the screw heads away to get them past the crankcase door lips having first made sure that they are loosened in order that the remains can be removed without further grief! There is enough room for at least one full turn so the full circumference of the heads can be made accessible and that should also be enough to gain the room tuck some protection for the big-end side plates under the heads. Even if the side plates were brand new they too are more easily replaced than the block and should be considered "collateral damage" in this instance, if not new they quite probably will need to be replaced anyway.

Despite the above seeming to be a classic case of one step forward and three back I still consider that gaining some, even if limited, potential independence of the cylinders to be worth it. The ability to mount an assault on one bore at a time will surely pay in the end as well as eliminating the big-ends as a source of stiffness.

Preparation is all as Dave Bushell's remark proves only too well. The spirit of Professor Sodd is alive and well and is lurking close by! Do some dry runs and remember the old toolmaker's addage; "Measure twice, cut once!"

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Lewis onions

Joined: 02 Jun 2004

Posts: 79

Location: Coleshill, West Midlands

Posted: Sun Jul 01, 2007 11:11 am Post subject:

Hello Robert - remember me from the pre-war AJS-Matchless forum? Sorry I can't help with the seizure problem - but as I suggested it looks like you will get some help through this forum.

May I recommend membership of the club? I seem to remember that there are some members in Germany who may be able to help you - but I don't know whether they are close to you in Dresden. Colin Hough is the Overseas Liason Officer and is likely to be tuning in to this.

Also you might like to see whether your Flyer is on the Scott register maintained by John Underhill, the Machine Registrar. It would be interesting to hear some of the details, beng a Scott originally supplied in Germany and knowing that you have a lot of the paperwork.

Finally, congratulations on ditching the Nortons! I work very close to Bracebridge Street where they were once built, but even this association can't stop me feeing that they are soleless things. Much less so the products of the Stevens brothers in Wolverhampton!

As I said before, welcome to Scotting.

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Roger Moss

Joined: 31 May 2004

Posts: 369

Location: Leicester UK

Hi Robert. What an interesting problem you have. I have been very reluctant to make a suggestion as one man's interpretation of what constitutes excessive force can vary widely from another person.

We do not have easy access to low temperature liquids, so if we were faced with this problem, I would first be sure that I had tried all traditional methods. I would have soaked the whole thing in a bucket of diesel for about two weeks. I am assuming that you have removed transfer port covers and have examined those areas of the pistons that you can see for evidence of corrosion.

If you have access to suitable machinery or tooling, I suggest that you make two recesses in the door seating face that are co incident with the position of the crank screws. Copy the original Scott features and be careful to leave some sealing face for the door.

Remove both screws, outer plates and rollers.

If the stiffness is due to corrosion of the pistons in the barrel, then you should be able to rotate the flywheel a little, as we need to isolate exactly where the problem is

Check condition of rollers and big end bearing surfaces, this may give some useful indication as to the extent of any corrosion

If rollers and bearing surfaces are in good condition, replace rollers on one side only and try to move piston by rotating flywheel.

Now repeat with the opposite side,

Do we have movement one side but not the other

If both pistons are solid but the big end bearing tracks are in good condition, Turn up a dummy ring in aluminium or brass to take the place of the rollers, to avoid brinelling of the track by the rollers when extra force has to be applied

Place in one big end

Clamp the crankcase firmly to a bench

Turn an aluminium bar to pass through the spark plug hole

Get a friend to pull the flywheel in the direction that is correct for piston on the downstroke

Give the aluminium bar a hit with a medium lump hammer

Repeat the process on the other piston

Consider that if the pistons are corroded in badly, then they are hardly likely to be useable and if necessary could be considered sacrificial.

I have found that if a steady force is applied and then a blow from a medium lump hammer with reasonable mass is applied in addition, then this will often solve the problem in hand.

Best of luck and kind regards Roger Moss

Rebuilding and upgrading of Scott and Silk power and transmission units. New enhanced replica Scott engines. Special manufacture Scott technical info at our website www.mossengineering.co.uk

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efr215

Joined: 06 Nov 2004

Posts: 215

Location: Leigh-on-sea, Essex

Posted: Mon Jul 02, 2007 11:26 am

Post subject:

I spent half a working life mitigating the "ten-thick-stubby-thumbs-on-each-hand" activities of university academics, Ph.D. and other student pond life so forgive me for cringing at the thought of letting anyone I didn't know loose with any sort of hammer!

As usual I find myself in agreement with Mr. Moss's words of wisdom save for the lump hammer bit. I also feel uneasy about removing even small segments of

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crankcase to make the removal of the crankpin screws possible. It will certainly work but I have to question the idea of chopping bits off fundamental castings unless there is no other way. On balance I think I'd rather attack the screws.

I note that Robert said he has access to liquid nitrogen and further that he has already made fittings for a hydraulic push which should provide a lot more controllable pressure and rather more kindly too. After all the pistons might be recoverable, something that will only be known when they are out. The one merit a hammer has is that it provides a shock load that does sometimes work when all else has failed.

On the positive side I agree with everything else, a good long soak can do nothing but help. Also the suggestion of making a soft bush is an excellent one and the suggested working sequence is the one to follow.

"First do no harm" should be pinned over the door of every biker's workshop! Always try to work on the basis of doing nothing irreversible.

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rmu1931

Joined: 27 Jun 2007
Posts: 9

Posted: Tue Jul 03, 2007 8:41 pm Post subject:

thanks for your replies!

i'll go foreward, cutting the chains and will take out the engine first.

Afterwards i'll put the hole engine in diesel for a while, i remember this hint from a friend, but completely forgot about it, thanks Roger!

There is no movement at all at the flywheel so it is most likely that the main bearings are involved too.

So first thing to try will be to take off the barrel if there is still no movement in the crank.

Therefore i'll do two things, first is a try with medium acid in the barrel that could take away some Alloy corrosion (Coke works quite well at this point, this is equal with concentrated citric acid, pH of roughly 2).

I'll figure out an appropriate time with some old pistons i have in my garage. After this it will be time for the liquid nitrogen.

I'll let you know about the progress.

By the way, i subscribed to the club yesterday, so it will be interesting to hear if there is any knowledge about my bike in the works directory.

w/ Best Regards
Robert

P.S.: still need to scan the photographs, stay tuned...

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rmu1931

Joined: 27 Jun 2007
Posts: 9

Posted: Tue Jul 03, 2007 8:42 pm **Untitled**
Post subject:

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rmu1931

Joined: 27 Jun 2007
Posts: 9

Posted: Tue Jul 03, 2007 8:45 pm **Untitled**
Post subject:

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Robert

Untitled

P.S.: still need to scan the photographs, stay tuned...

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rmu1931

Joined: 27 Jun 2007

Posts: 9

Posted: Wed Jul 11, 2007 9:59 pm Post subject:

Hi *,

after a few days in diesel, we have the first movement in the flywheel, not very much but feelable. javascript:emoticon(':lol:')

There is also movement of the barrel. I was able to move it about 3mm upwards, equal on both sides of the barrel, so fingers crossed that there is no big seizure in the barrels, but this was quite easy to move now (pushed with the grease pump, in the barrels after slacken the screws a bit and a few hits on barrel and screws with the rubber hammer).

So first movement is done, the block went back in diesel again, so it can be there for some more days, i need to prepare some other stuff now.

Is there anybody by chance who can offer the clutch lever? There are both inverted levers with the bike, but the clutch lever is missing. I guess it is a Best and Lloyd one, right?

Try this link for the pictures of my bike, you need to click on "GMX Mediacenter starten" button, sorry for the german text..

LINK

Thanks in advance.

Rgds
Robert

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efr215

Joined: 06 Nov 2004

Posts: 215

Location: Leigh-on-sea, Essex

Posted: Thu Jul 12, 2007 12:05 am Post subject:

Nice pictures and there is always Bablefish for the writing!

Glad to hear there is progress, sooner or later the brute will learn manners!

Can you not fish out most of the grease and use diesel as a fluid? with your pressure device it should force it down the sides of the piston and help free things up a bit more. This is the one time when you hope the rings are stuck!

Also have you tried the cold treatment yet?

You are doing the right thing, the best tool you have with a job like this is

endless patience.

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