lewis onions

Joined: 02 Jun 2004
Posts: 79
Location: Coleshill, West Midlands
Posted: Tue Jun 24, 2008 3:36 pm Post subject: Oiling Again

I have discovered that my Birmingham Scott oil pump has been convered to an oil dripper at some time - it no longer has a drive. I am a bit concerned that the engine suction might not be sufficient to ensure equal oiling of both sides of the engine - or at all.

Has anyone any experience of this conversion and how best to operate such an oil system?

I assume that I must run on a petroil mix as well as relying on the dripper?

What would be the best oil to use in each case? I am drawn to modern 2 stroke oils for the petroil mixture due to the lack of smoking but wonder whether this is fit for purpose?

Any thoughts or observations would be much appreciated.

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dave bushell

Joined: 09 Jun 2004
Posts: 231
Location: Caterham, Surrey
Posted: Tue Jun 24, 2008 4:39 pm Post subject:

Hi Lewis.
I've always understood that the term Pigrim "Pump" is a mis-nomer, and it is in fact, no more than a metering device. The supply of oil still depends on crankcase depression to draw the oil into the engine. I may be wrong and no doubt some-one more knowlegible than I will put me right! So converting a pump to the pure dripper version should make no difference. The oil in the petrol is a "belt and braces" move.
Dave

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Colin Hough

Joined: 10 Sep 2004
Posts: 62
Location: Amersham, Bucks
Posted: Thu Jun 26, 2008 5:49 pm Post subject:

Lewis,

I, like you, have been really concerned about how much oil my Birnigham Scott needs and have talked to several people about it and have planned to read right

through the Technicalitites. You post has now made me read throguh them. I suggest you do also, but let me give the run down on what I have got out of it:

There are three approaches to oil feed:

Note: all rates are to each side

1) total oil feed from the Pilgrim (with possibly a very minor oil addition to the petrol) which was the original design.

This is the method preferred by many including Glyn Chambers. But what is the rate. Glyn intalking to me suggests setting the pump up at 4 spits to the drop (4 to 1) though in the Technicalities he has said as low as 6 to 1. However, he notes (vol 18 No 9 Apr 1994) that 1 in 10 is OK for normal use IF YOU COULD rely on it. This is a common theme i.e. the Pilgrim pump is not relyable at the low dosage rates required by the Scott. In the Technialities, Glyn (7/9 Jan 72) has said that 6 to 1 is about as low as you can go with the pump and still expect it to be reliable. Brian Marshall (20/9 Apr 98) says that 4 to 1 is about as low as it will go. I assume that all of these are at tick-over speed.

But how does this relate to oil rate? Some others use drips per minute (dpm) which to me is a better measure. Goeff Milnes back in the '60's gave the instruction for my first Brum as "check it gives 15 dpm each side with the engin idling and add an eggcup full of oil to each gallon of petrol". In those days this was, of course, 'straight' engine oil, probably SAE 30 for summer use.

The Book of the Scott notes the oil rate should be 20 dpm when running slowly for the running in period (1500 miles) and then 10 - 15 dpm for normal use thereafter. It also recommends addition of upper cylinder lubricant 1/2 oz to 2 gal.

However, I have not been able to relate 'spits to a drop' to dpm so cannot relate how the Technicalities compares to the dpm of the BotS.

The purpose of working through this is to illustrate that the Pilgrim needs to be set to minimum flow that is too much anyway and that dpm with old fashoned oil is about 10 - 15, so we could summise that 10 dpm is OK with modern oil.

2) The next method has been described as 'half and half' (and is what I use). It was stated by several contributors that the mains and glands need less oil than the big ends or top end and that petroil does not lubricate the mains/glands. This means that petroil can be used for the big ends and top end, and a reduced oil rate for the mains. In fact, most commentators simply refer to a fxed dpm in this case.

It should be noted that the standard Pilgrim cannot be adjusted down far enough to give the correct low rate of oil feed. It is therefore recommended that either a reduction gear is used (as I have) or the Pilgrim is converted to dripper operation (as you have). Bother were offered by Gerry Howard from the early '80's up to when I bought mine in 1999. (For those interested in the reduction gear, there are a couple of articles on how to do this by others).

So, what are the right settings and oil (which is the anwer to your question). Using modern synthetic pre-mix 2-stroke oil plus drip rates, the numbers suggested are:

i) Brian Marshall (20/9 Apr 98) 50 - 60:1 petroil plus no more than half a dozen dpm (which CANNOT be achieved with a standard Pilgrim)
ii) Ged Rumble (20/11 Aug 98) 50:1 plus 5 dpm (and provide heat insulation for the Pilgrim converted to dripper to avoid excessive temp veriations due to heating form the engine as the oil rate will be sensitive to temperature)
iii) Dennis Wray (7/10 Mar 72) 50:1 plus Pilgrim at min setting (4 spits to a drop) driven by a 3:1 reduction rear ('equivalent' to 12 spits to a drop at normal speed)
iv) Gerry Howard (17/8 Feb 92) 50:1 & cut Pilgrim down to min possible - if converted to dripper mode then use 4 dpm
v) Brian Marshall (19/1 Dec 94) 40:1 and 4 or 5 dpm is plenty for the main bearings and glands

vi) Dan Hewitt (19/5 Feb 95) 50:1 and has to use 10 - 12 dpm as does not have reduction gear i.e. min setting
vii) Richard Duffin (2007 conversation) 40 - 50:1 plus 6 dpm

So, this is a good indication of the sort of setting that is being used

3) The third option is full petroil as Titch recommends, but this needs a 'cross-over' conversion as petroil does not lubricate the mains and glnads. However, this is a significant mod.

There have been a lot of other 'one-offs' like Mavro & Lofty Lube, but are outside this post.

Regards,

Colin

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Colin Hough
1959 Brum
SOC Membership No. 473

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Ted Robinson

Joined: 04 Oct 2004
Posts: 29
Location: Coventry
Posted: Thu Jun 26, 2008 9:47 pm Post subject:

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dave bushell wrote:
Hi Lewis.
I've always understood that the term Pigrim "Pump" is a mis-nomer, and it is in fact, no more than a metering device. The supply of oil still depends on crankcase depression to draw the oil into the engine. I may be wrong and no doubt some-one more knowlegible than I will put me right! So converting a pump to the pure dripper version should make no difference. The oil in the petrol is a "belt and braces" move.
Dave

Hi, Dave, A Pilgrim Pump is definately a Pump. I had a chat to David Brierley some years ago and he told me he had put a pressure gauge on one and if I remember correctly he got a reading of 30psi plus.
When I worked at the BTH in the 1950s we had large compressors fitted with Pilgrim Duplex Pumps, there was an oil feed that went to the top of the cylinder which I can remember breaking and it spewed oil all down the side in spits. The difference with a dripper you will get the same number of drips regardless of speed whereas with a pump it will be variable with engine speed. There is nothing wrong with a Pilgrim just the wrong application on a Scott running at engine speed.
Best wishes Ted.

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Colin Hough

Joined: 10 Sep 2004
Posts: 62
Location: Amersham, Bucks

Posted: Thu Jun 26, 2008 10:17 pm Post subject:

Lewis and Dave,

I have re-read my post and a couple of other comments:

1) I agree with Dave (and several contributors to the Technicalities) that the Pilgim is only a metering device and the engine actually 'sucks' in whatever drops into the Pilgrim bowls. Note: the BotS refers to pumping under pressure but this is wrong.

Note: when riding after a long period of no use I put a little oil in each well so that it is sucked into the oil feed pipes immediatley. Also, after the winder lay off, I disconnect the pipes form the inlet and squirt oil directly into the engine so there is a lot around for the initial period. This is synthetic Comp 2 injector

2) Remeber that the rates quoted re dpm if only using 'pumped' oil are at tickover and will increase with engine speed so that at normal road speeds the rates are higher. I memtion this as trying to set up a dripper to do the full speed range on its own may need higher settings.

Question: What do people who have classic drippers use for the setting???

3) Re the drip rate with petroil, in my discussion with Richard he said that he uses a dripper so is using 6 dpm over the full operating range. However, if setting up a conventional Pilgrim with a reduction gear then the rate will go up with engine speed.

Another observation is that Lofty noted that the Loftylube (i.e. huge oil rates being metered out but then the excess scavanged from the oil wells and returned to the oil tank) was getting through a pint of oil every 200 miles whereas he would expect 300 - 400 miles and commented that a lot was leaking out from the glands. This ties in with my experience as I was getting a lot of very clean oil leaking out but now know I was over-oiling. I set it up for 2 spits and a drop in the belief that with a 2:1 reduction gear this equated to 4 to 1 as recommended by Glyn but I now realise that Gerry's reduction gear was actually 3:1 and I did not need to match 4 to 1 as that was more than required. Having now gone over to pertoil at 40 - 50:1, I have cut the Pilgrim back to the minimum it can dispense.

Regards,

Colin

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Colin Hough
1959 Brum
SOC Membership No. 473

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lammy1

Joined: 19 Dec 2005
Posts: 32
Location: the Netherlands
Posted: Fri Jun 27, 2008 6:36 am Post subject:

Hereby a picture from a lofty conversion.
Photo taken at the centennial at Abbottsholme.
The man from this bike said that his bike didn't smoke even at startup.

Frank

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See my Scott at www.scottin.nl

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Colin Hough

Joined: 10 Sep 2004
Posts: 62
Location: Amersham, Bucks
Posted: Fri Jun 27, 2008 8:47 am Post subject:

Hi all,

It's me again as I have now read Ted's post.

Let me try and explain my understanding of the Pilgrim and what a pump is.

To me a pump is a device that increases the pressure of a fluid such that the fluid can flow from a higher pressure location to a lower one i.e. the pump causes the fluid to flow.

The Pilgrim is technically a pump and will put up pressure against a resistance (though 30 psi surprises me). However, as used, it is not 'pumping' oil into the engine. Rather, it is putting out oil at whatever the pressure is in the bowls and hence it forms a 'drop' that falls off. This drop does not 'contain' pressure so that it is forced uphill through the line to the engine. It actually sits in the bowl until the engine sucks the drop into the line. Hence I prefer to describe it as metering the flow into the bowls and the engine then takes whatever is in the bowl.

To show that the engine sucks oil, try this: take off the plastic cover and pour a little oil into each bowl and start the engine. This oil is then sucked into the engine and certainly is not 'pumped' in.

Therefore, whether the Pilgrim is used as a 'pump'/mechanical metering device or simply drippers, whatever drops into the bowls gets into the engine.

Now, back to Lewis' question:I think that you have no worries about oil getting into the engine - if it gets into the bowls then the engine will suck it in. Remember, converting a Pilgrim to dripper operation was specifically offered by Gerry Howard as an improved system over a 'pumping'/metering Pilgrim pump. However, I personally would use petroil (synthetic pre-mix oil) and rely on the drippers only for the mains and glands (using synthetic injector oil) so set up at about 6 dpm (or a little more initially until you have total confidence in their ability to maintian a reliable constant rate and/or when pushing the machine really hard).

Colin

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Colin Hough
1959 Brum
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lewis onions

Joined: 02 Jun 2004
Posts: 79
Location: Coleshill, West Midlands
Posted: Tue Jul 01, 2008 8:15 am Post subject:

Many thanks for all of the useful information. I now feel confident enough to put the bike through its paces without worry.

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chris wastell

Joined: 31 May 2004
Posts: 68
Location: Wiltshire
Posted: Sun Jul 06, 2008 12:02 pm Post subject:

David Brierley has contacted me today to say that when he ran his test on the Pilgrim pump it actually produced 90psi at the gauge. He also wanted to reiterate that it is indeed a pump, his interest in the subject being proffessional as well as hobby. The sectioned drawing in the Book of The Scott shows this and if you look at the stripped down assembly it is quie obvious. If you would like to furnish your E-mail address, Lewis, I can put you in touch. David has told me that he would be happy to explain everything over the phone.

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Mike Fennell

Joined: 22 Jun 2004
Posts: 17
Location: Essex
Posted: Mon Jul 07, 2008 12:33 pm Post subject: oiling again

I hope that Dave Brierly's comments can be posted on the forum as well, so that we can all benefit.

I concur that examination of the Pilgrims construction and design will show that it is indeed a pump. 90 psi is not too much of a surprise if the output were to be directed against resistance - ie into a closed pipe such as a pressure gauge.

Nothing has been said in the postings so far about the ports at each end of the plungers, which alternately open and close both inlet and outlet drillings in the body. So, it is a pump at both ends. Also, it is never possible for inlet and outlets to be open at the same time, hence the idea that oil in the bowl is sucked clean by the engine is not possible - it must be first sucked into the pumping chamber through the inlet from the bowl, then pushed out through the outlet into the feed pipe before engine suction can take over. If this were not so then it would constitute a serious airleak and interfere with starting and running generally.

Actually, both sides of the debate are correct because it is both pump and

metering device. This of course is due to the adjustable plunger stroke up to its maximum of about 2mm. The problems arise when attempting to reduce oil flow rate to the minimal amount needed for prolonged slow running - idling in traffic or, more seriously, a 10 mile descent of an Alpine pass (the worst case scenario according to Lofty Avis). It is impossible for the pump to meter accurately and reliably at such low rates with a stroke of perhaps only 0.25mm. It is this conundrum that led Lofty to develop his revolutionary Loftylube system which allows almost any amount of oil to enter the engine and controls its accumulation inside the crankcase by a scavenging arrangement. Castigated by some as too complicated, it works completely automatically without the need for any adjustment once set up. One grade of oil in one tank constitutes the supply side and there is no need for messing about with oil in the petrol. Very simple in operation. Virtually free of smoke and a clean cut-in on the throttle when opening up after that long descent.

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chris wastell

Joined: 31 May 2004
Posts: 68
Location: Wiltshire
Posted: Mon Jul 07, 2008 1:42 pm Post subject:

Exactly. The oil is "metered" in and pumped out. If I had a Lofty Lube system my engine may not be in bits on the workbench now!