

# 2017 Scott Newsletter

## April



**Scott family pics**

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**EJP**

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## A Lucky Man

Reinhold Sprenger is a fellow Scott owner who lives in Austria near an alpine area. He has a spirited character and so liked to enter the competitions for vintage and classic motorcycles on these alpine roads.

I much envy him this, as with our editor Ted Parkin, I have also taken part in mountain pass races in Switzerland. Reinhold does not speak English, so his daughter Alexandra, who speaks and writes excellent English, acts as his translator. In the usual way of competitors, Reinhold decided he would like a more powerful engine and asked me to build an engine to the advanced specification that I would build for myself to use in competition. We all realise that each increment of advancement brings benefit, but there is a law of diminishing return, so that the refinements at the upper end, cost more per extra BHP than the initial steps.



*Reinhold sent me a photo of him on his Scott during an alpine race, so I could see that he was serious in his wishes.*

reasoned that the more successful a Scott is in competition, then the reputation of Scotts will be more widely recognised. I used one of my crankcases with larger gas passages.

These were machined to accept Moss cranks designed to work with ball bearing main bearings with synthetic seals. Barrels were Moss Aluminium barrels with chromed bores exactly as used by Yamaha TZ racers of the 1970's. Moss heads were fitted and the engine equipped with one of my designed 38mm carbs made by Eddie Shermer.



If there is space I attach a pic. Of Reinhold and Alexandra opening the box when they received this engine. Providing a customer has the financial strength to commission such an engine, then the project becomes a great pleasure for both parties.

To manufacture such a high specification engine gives a true engineer a unique sense of pride at the achievement, whilst the customer has the satisfaction of having a very rare hand built engine that is in all respects a "Works Engine" I am 76 now and I much doubt that there will be many or perhaps any more ever made to this spec.

In 2012, Marina and I travelled to join Pavel Simek in street races at Dvur Kralova in the Czech Republic. We were made very welcome and enjoyed the event hugely. After this there was another unique event round the ancient small town of Branna. We then went on to take part in an event at the famous Grossglockner High Alpine Road

Here we met Reinhold and Alexandra for the first time, as Reinhold was also competing at this event. About two years later, Reinhold sent me the Scott engine that had been replaced by my sports engine in one of his two Scotts. This was for a more modest rebuild as a brisk road engine.

This is in process at the present time In February 2017, I was contacted by old friend and ex racing rider Grahame Rhodes, to tell me that he wished to sell his Sprint Special racing Scott that I remembered when it's then owner Dave Ward raced it against me in the early 1970's.

At this point I must be careful as if I describe it as a "Sprint Special" then the purists are up in arms objecting to the description, explaining that it was built with Webb forks from a Velo, just like mine. So the frame is genuine Sprint Special No 3 and the bike was rebuilt as a racer to be as true as possible to the type, but with some refinements to improve it's suitability as a racer. As this was an unusually desirable machine and to help a very old and respected friend, I circulated the fact that this bike was for sale using my bulk email send facility.

The final part of this story is that Reinhold Sprenger has bought this bike and the third picture shows this lucky man's collection of Scotts. Verily, he has a "Bike for all seasons" and purposes. Good luck to you Reinhold and I am pleased that through you, the reputation of Scotts will be spread yet more widely in Europe.

**Roger Moss**

**From:** Thomas Hammersdorf [<mailto:thomas.hammersdorf@mail.de>]

## **Water leakage on my cylinder head**

**Dear Roger,**  
I used the beautiful weather last week to drive my '29 Flyer a longer distance. So far everything well. The Scott is really a nice and handsome motorcycle. Unfortunately now, after I have driven the engine once really hot, a leakage of the cooling water on the cylinder head occurred. Below is a picture where the water escapes. Can I simply open the lock nuts and seal underneath them, or is the design more complicated? In the pictures in the Book of Scott I can



not see exactly how the seal works.  
Thanks for your kind support in advance  
Thomas



Please study the pictures I attach

The top of the cylinder barrel casting has a tapped hole 15/16" x 24TPI x 60 degree British Standard Cycle thread.

Into this a piece we call a "Ferrule" is screwed

The ferrule has a tapped hole in its centre for the spark plug

Engine of date 1929 might have a spark plug thread of 18mm as shown in image 7345

The ferrules I make have a thread for spark plug as 14mm as this gives much bigger choice of spark plugs.

Look carefully at the ferrule image 7344 and you can see it has two larger circles of metal, we call "flanges"

The short length of thread is screwed into the thread in the cylinder

The long length of thread is up.

The “Flange is to give a seat for a sealing washer or gasket

The aluminium water jacket will sit on this sealing washer and the ring nut will pull it down.

There are different thicknesses of gaskets available for the outer sealing diameter and the seal on the flange of the ferrule is usually a copper composite gasket.

Now look again at image and note that the seating flanges have corroded away, so there is no seat for a gasket.

Also I should tell you that when the water jacket is removed, you might see that the seating face that is intended to sit on the gasket on the ferrule, might be very corroded and will no longer be an effective seat.

I do make ferrules, but I have just sold my last examples and have more in manufacture. It might be that the Scott owners club Spares scheme might have a few, but they buy from me and have recently asked for more.

The way I remove old ferrules is with “Stillson wrench, but I find that it is much better to use a tap (threading tool) to clean any corrosion out of the tapped hole before fitting a new ferrule with some sealant. These taps are an unusual size, but I could send this tool if you intended to fit a new set of ferrules.

I would ask that you did not ask to borrow the “tap” until you had removed the old ferrule, as I use these tools very often and cannot be without it longer than absolutely necessary.

It is impossible to judge what would be necessary to recover the aluminium water jacket until the condition could be seen.



I suggest that you remove the locking ring nuts, but only one at a time

Clean underneath. Buy Loctite Black Silicone SI 5980 and put a layer of this round the thread of the ferrule and the seating of the aluminium water jacket. Then replace the ring nut and leave for 24 hours

Then repeat this with the other ferrule.

Please understand that this is not the best repair. It is only a method that might stop the leak so you can use the bike until it is repaired properly.

The ferrules I make have a special process to resist corrosion so will last many years.

I do have new water jackets if needed, so your problem can be solved.

Please try this and tell me if you have success

Kind regards

**Roger**

# Vincent to the North

*(World copyright E.J.Parkin 1995)*

**Wet!**

Did I sleep? I don't remember! All I know is that there seemed to be a constant drone of bumping, bashing, crashing wagons rattling throughout the night. I had a bad night! It is cold (*What do you expect Ted, It's Dovrefjell, 5070ft above sea level, of course it's cold!*) My breath escapes in an unceasing cloud of vapour, turning the inside of the tent into a damp, muggy cavern. Rocks to this! It's got to be better outside!

It isn't!

It's dripping with moisture, the woods steaming as they adjust to the rapid drop in temperature. I have slept in my normal riding gear and consequently am even colder than normal. I run down the path the Chinaman took. After about two hundred yards I come across the main goods line down South, on it is parked the longest train I have seen in my life! This thing must be almost a mile long and is full of what looks like aggregates or iron ore.



Crash!, Clang! Go the wagons as they are shunted back and forth. No wonder I couldn't sleep last night! This has got to be the worst place to pitch a tent in the whole country of Norway!

I run back to the bike.

Liz gets out of the tent!

Hells Bells! I hope I don't look as bad as she does!

Liz sees me. Looks heavenward, raises her fists and screams "Baaaaaaaaaaaaaaaaasssssssstard!" at the top of her voice.

She drops her arms and says "Thanks, I needed that!" Looks at me and remarks, "There's one thing I am at least grateful for Ted" *Yes what's that!*. "I'm glad I don't look half as bad as you!"

We swap night-time experiences which consist of accusing each other of snoring, keeping each other awake and both of us "Never got a wink of sleep all night!"

As we discuss that night's events we are witnesses to one of the most amazing sights I have ever seen. The mist rolls away above our heads as the sun breaks through. we look into the valley seeing layers and layers of mist and fog roll towards us, pushed by an upswelling rush of warm air. It is like waves on a beach. The temperature rises then drops as the waves pass over us. We turn to watch the receding ranks as a cold blast of air hits us from the top of Dovrefjell reversing the flow and forming a rolling wave of cloud. This rushes past, the temperature plummets and we are immersed in the cold fog again. This rolling and waving continues for about 15 minutes as we silently watch the interplay of warm and cold air battling for supremacy. We are wet and very cold but stand transfixed watching massive forces decide our fate. Cold air means misery, warm air means fog but with the expectation of better things to come. We need food. So retire to the tent and let the mountains sort themselves out.

Our priority is the cooker in the tent warming our deep chilled bones to something like normal and tipping copious quantities of hot tea into our mouths. The eggs simmering slowly with the tomatoes and bacon. These are the things that matter!

The Battle of the Winds resolves itself into a stalemate as the fog returns for a while. I survey the damage to the outfit from last evening's efforts in the bog.

The sidecar mudguard is fractured and flapping around. I can't leave it like that so take the line of least resistance and rip it off to join the camping gear in the sidecar. We only saw 8 cars yesterday so the chances of being stopped by a policeman have got to be zero! The main body of the sidecar and all the bike aft of the front forks are covered in slimy sticky mud. We leave it all, pack the bike and leg it!

The map tells us that this could be a traumatic day! We are 2 miles out of Dombas and on the climb of Dovrefjell. The National park starts 6 miles up the road and if it is anything like the last one should be spectacular in the extreme.

It rains. Lots!



We swing out of the forest and onto the road, a good surfaced B one. There is an immediate sharp increase in incline with a corresponding drop in road surface quality. We weave and dodge the potholes, the speed being dramatically reduced to achieve this. What a great sense of humour these Norwegians have. This isn't a road, it's an endurance test. The gearbox is dropped to third to enable us to pick our way around the worst of them as Liz twists and turns to be in the correct position. Our body temperature rises and we are no longer cold with all the physical and mental stimulation we are generating. A hairpin bend, the road has gone! There's no road there at all. Absolutely nothing. I saw a roadwork's sign two hundred yards back but this is ridiculous! What they have done is remove the road to stop it getting worn out. There's logic! Must be another Conservative Government in power in Norway.

Whoever did it they are certainly achieving their objective as the tracks of previous vehicles wind all over the place. It seems that the answer is to find where the ground is less pot holed or mud filled and pick your own route. We slip and slide around another bend, this would be impossible on a solo, as Liz leans over the sidecar wheel. Left, right, a burst of power which sends the front wheel crabbing to the right and into a water filled ditch.

**Whoosh!** muddy brown water deluges over the bike and us. The engine keeps

plodding on, now in second gear, steaming as it vaporises the water on it's hot engine casing.

We crab back to the rut, a burst of power spins the back wheel throwing a brown fountain of shale and mud 10 feet in to the air. Liz ducks, "Missed me!" she laughs. I try third, less wheelspin and more grip, as Liz jumps up and down on the rear of the bike to encourages traction. We are drowned rats. No we're not! We are very dirty brown drowned rats and there is no point at all in stopping. Indeed! I don't think we could start moving again if we were forced to stop. The track turns to large pebbles as we climb to the snow line. All the snow has long since disappeared under the wheels of the passing traffic. We now bounce and judder over the cobbles. I scream, "I'm going to try some full throttle work!" warning Liz to hold on tight.

Third gear, three quarter throttle and we blast upwards, small stones exiting from the rear in a steady stream of flying projectiles. Thank goodness there is no one behind us, these things would smash windscreens and body work to smithereens. Any drivers would need full head and face protection to even attempt this climb in convoy. We blast through the stone layer and splash our way through a rapidly deepening stream, I swerve to the right and put the sidecar wheel up on the bank with the bike wheels just clear of the water. That way we seem to get more traction and are more stable. A pile of sand tells me that we are approaching the roadwork's! The previous bit was the approach. Now comes the real thing!

It's easy!

We just gun it in third all the way to the top on a hard bed of sand and shale. The technique is to keep forward motion at any cost. If we slow we lose steering and start to slide to the left, the drag of the sidecar pulling us. The road sweeps right, we can't change gear because of the steering so I open the throttle wide. Liz swings out and leans as far out to the right as she can, her elbows sweeping the sand, her helmet down by the gearbox as I pray. The motor digs deep into it's reserves as the engine note gets lower and lower. Fortuitously, this is the ideal set up for loose sand as we power through the bend. We break traction and the engine revs and grabs, revs and grabs throughout the climb.

Liz shouts, "The top! Look!"

She's right. We see the summit about 600 yards ahead and I blast it as a stream of shale and sand fans skyward from the rear of the bike.

What a climb!

I like to watch speedway but my goodness that was exhilarating! Liz laughs, "Good Eh!"

At last! A team.

We are at the top of Dovrefjell. Not a lot to look at really, I wouldn't travel miles to see it. It was just in the way stopping us getting to our destination.

The tarmac returns, I select top gear and let the bike rumble it's way down the other side taking time off to admire the view.

Dreamtime.

Do you know what I like about all this?

It's the sheer poetry of it. Look at it like this. Here is a 1955 motorcycle and sidecar transporting two people across countries, up mountains, through fords, snow fields and along dirt tracks. It doesn't stop, it takes abuse, all it needs is oil and petrol. If an eagle were flying above us and looked down it would see this tiny, tiny outfit achieving all this. I mean, those pistons go up and down millions of times every day!

I ponder these thoughts as we descend the mountain, the sun fitfully peeping through the drizzle. Pretty streams meandering on our left as we drop down to the town of Oppdal where a well earned coffee awaits us. It rains as we arrive but we couldn't care less! At least it will wash some of the mud off!

A local looks at the bike peering round to find the riders of this strange machine. He doesn't need to look far as we are instantly recognisable, the same wet, muddy brown colour as the bike! He introduces himself and we chat awhile. From him we learn that it is a normal occurrence for the road department to completely remove the road. No one complains he tells us. I'm not surprised! Anyone who uses that road cannot **afford** to stop and complain! Furthermore, you have to find someone to complain **to!** We aren't bothered! We have no intention of retreating our footsteps.

The North calls and we have just gone over the highest pass on the Northern highway, we have confidence and achievement on our side.

We tog up and troop outside to the Vincent. The front lights are hanging at a rather jaunty angle! No problem! I take them off and chuck them into the sidecar with the mudguard! We are looking somewhat anarchic by now, a rakish, dangerous ambience surrounds the bike and it's riders. We look like travellers who have survived rain, storms, deserts, floods, pestilence! (*Steady on there old chap, no need to go over the top!*)

We are cold and still wringing wet from the soaking and effort on Dovrefjell, we need to move to keep the spirits up. It rains, this wasn't in the script. We were supposed to get warm sun and fair maidens greeting us as conquering heroes! The rain is reality. Our wet backsides are reality. The cold seeping again into our finger ends, toes of our

feet, freezing our faces and chilling our bones is reality. We move off.

Ulsberg, Berkak, Heimdal pass. It rains some more. We are soaked and despondent.

Trondheim looms.

"I say old bean, rather damp, Eh!" Liz's awake then! *Too true mate!* "Could do with a warm up, dontcha know!" *Damn right!*

"I have a thought, Liz?" she answers, "Hang the expense, lets get a hotel room and warm up!" A sudden lurch in my coat as the Barclaycard and Wallet heard this rash pronouncement. "Shut up you two, this is an emergency!" Liz leans round and asks me who I am talking to. I tell her it's the money acting up again. She understands.

When in doubt go to the poshest Hotel in town. We do. I march up to the reception desk, mud splashing on their deep beige carpet and ask for a room. A Miss World contestant with the sweetest smile you are ever likely to see says, "Get lost!" I am taken somewhat aback at this and ask for a recount. "You heard buster!" She had obviously been watching too many American police drama's. I insist we get a second opinion. The Incredible Hulk is summoned and suggests we leave.

Sharpish.

Whereupon Miss World says, "Have a nice Day!" I turn, "You too!"

Liz is disappointed. We try three more hotels, all the same response. This is exceedingly strange and is the only time in Scandinavia we are treated this way. "OK then, if that's what they want they can keep their hotels!" *Was that a faint cheer from the pocket?*

We trot out of Troublesome Trondheim, spirits as low as the cloud and rain storms. This black mood is not helped as we pass through the rather appropriately titled village of Hell! Ride 10 miles out of town and hire a log cabin for the night. Expensive, but necessary, it has a large heater installed. We light it and heave all the wet gear, which is most of what we have, into the cabin spreading it around until it's like a laundry.

We, like Rhett Butler, "Quite frankly, don't give a damn."

We are warm, it means a lot.

It is only 3 in the afternoon, enough is enough. We rest.

Liz decides to go for an explore and try out the fishing rod, first time it's been out of the sidecar. For myself I need to re-attach the sidecar mudguard, refit the lights and



generally give the bike a thorough service. The drizzle eases, Liz togs up, picks up the rod and sets off. I get the tools out and have a look see. Firstly, clean off some of the mud so I can see what needs doing. The chain is dry and needs re-lubricating, various bolts need re-attaching, another re-wire of the electric's is needed and a general check over. Enough to keep me busy for a couple of hours.

I finish just as Liz returns, no luck with the rod, she suggests I pack the maintenance in for now and join her on a trek around the Fjord. A four mile hike gives me a different perspective on the trip and Norway. It's good to have a change and re-charge ones physical batteries. Riding the bike all the time is not the most physical of experiences. Liz enjoyed the trek and doing something other than sitting on the pillion, she tells me that sometimes it's quite restrictive being on the sidecar for such long periods.

The rear tyre is really quite badly worn. It was new before the start and although we do not have an immediate problem we will need to get a replacement before the trip is over. Anyway, a problem for another day. We enjoy the heat in the cabin, fill ourselves up with fresh fish and salad then retire to our bunks.

Bunks! Luxury!

I don't know about Liz but I slept like a top!

**To Be Continued.....**

## **Gearbox**

Roger Moss

Sat 08/04, 19:27 You; Raymond Pallett (rayp\_94040@yahoo.com)

Dear Ray

I mentioned your gearbox operating lever problems to Eddie and he told me that he repairs these with good results

The bronze high gear bush always wears quite badly on it's end thrust face that takes the reaction to the clutch springs.

I would estimate an end float / clearance of about 0.020", so that as the clutch goes off, there can be the possibility of a bit of "Wander" to get oil between the faces.

Years ago I remember fitting a brass tube with the top 40% cut down, like a small rainwater gutter to catch oil flung up by the end gear set and carry it downhill to the high gear bush.

If measurement showed that it could be done, I would be tempted to explore the possibility of fitting a thin INA thrust washer, as I never liked this provision for

taking the end reaction.

The end reaction is dictated by the pressure of the clutch springs.

The pressure of the clutch springs is dictated by achieving the drive capability of the clutch

The drive capability is dictated by the friction between the friction plates and the plain plates.

That is of course, assuming the clutch plates all move freely and the tangs are not so hammered up that half of them are inoperative.

As regards the friction, the plates are punched out of a malleable sheet steel, so as to reduce wear and tear on the press tools.

Good for the plant that makes them

Bad for the owners who use them, as the tangs hammer over readily and the plain faces polish up like glass.

If you take the plates out and dress up the tangs then lightly sand blast the plain plates, you can reduce the spring pressure and thus high gear bush thrust face wear.

I put a lot more power through than normal, so I have shed all these tears of frustration.

I ended up making new plates laser cut from O1 Ground Flat Stock, which the original manufacturers would never have used as it is so much more stiff that it would have worn out the press tools very quickly. It does not take a shine like the soft original material.



I have friction rings glued to the discs cut for the friction plates and grind them up flat.

Then grind three slots through, so six in all x about 5/8" wide x 0.030" deep in the frictions. This is to allow any thick oil coming through the high gear bush to at least have a chance of being flung out.

If I get clutch drag, I pull in the clutch lever, tie some string round to hold it in the withdrawn state, with the bike on its stand and the back wheel free to rotate in top gear, pull it round to free the plates. Next I put some petroil mixture in a filling jug with a long flexible spout. Get someone to turn the rear wheel while you pour petroil over the clutch to get between the plates. It works wonders !

My clutch will cope with about 45 bhp without excessive spring pressure, but my old friend George Silk has designed a new lightweight clutch to go on the Scott and I have one on order. George is a very busy man, so you learn to be patient, but I am sure I will see it one day.

And so, you see, we must follow the logic through and start at the beginning.

Just one more point. When you have serviced your clutch, set it up with the minimum spring pressure that you need to prevent the clutch spinning. Set it too light for a start and work up to a pressure that will cope with what your engine and loads will need and no more. In this case it spares the high gear bush and should you make a bad change, instead of the overload damaging the undertray, the setting of the clutch will act as an "Effort Limiter" to prevent Damage

Here Endeth the first lesson

We will now sing "All things bright and beautiful"

No wonder I never get enough work done !

**From:** Raymond Pallett [mailto:rayp\_94040@yahoo.com]

**Sent:** 08 April 2017 18:34

**To:** Roger Moss <roger@mossengineering.co.uk>; Eddie Shermer <eddie.shermer@hotmail.co.uk>

**Cc:** John Sims <lordjohn@ix.netcom.com>

**Subject:** Gearbox

Greetings chaps.

I decided to strip the gearbox so that I could take the case to the vapour blaster with my engine case so that they will all be ready for the next phase when I get back from the UK and hopefully seeing you guys at Stafford. The clutch actuator and main bush had me scratching my head as I couldn't see how they were assembled at first. A few moments with my favourite dentist's pick shifted enough of the crap that has

accumulated over nearly 80 years for it to become obvious and everything came apart nicely.

I have to say pretty much everything other than the external change crank, the outrigger bearing and I suspect the main bush is in excellent shape. As previously reported the crank has a broken tooth but I don't see too many issues associated with making a repair. The outrigger bearing is shot - very notchy and will have to be replaced. Fiendishly expensive these old bearing sizes!

I'm a little concerned by the main bush. I'm attaching a couple of pictures - it looks to me as if there has been some significant interaction between the top gear wheel, the face of the bush and particularly the steel anti-rotation screw. Do you usually see this? If this is typical wear then I'll fit a new bush - probably will have to anyway when I have measured the bore as it looks like there is wear in there too. Do you know off hand the end float spec for the main shaft assembly? Getting the shoulder dimension for the bush looks like it could be tricky given the wear on it and the gear wheel.

Well so far so good and as I said I'm looking forward to seeing you at Stafford if all goes well.

**Ray**

## **Replacement cups**

Hi Folks.

I have been asked about cup replacement, so herewith an outline for those with a mechanical interest

Like most jobs on a Scott, either do it properly or not at all.

Let us start at the beginning, as original manufacture

The case is bored 2.625"

The cup is ground to 2.630"

The case is heated and the cups dropped in

The ID of the shrink ring groove is turned 3.000"

The shrink ring is turned 2.991"

The shrink ring is heated red hot and dropped in the groove

The cup goes slightly oval and tapered, so has to be reground in situ

What happens in long use

The case expands every time the engine is used and gets hot

Then contracts at it cools off

Perhaps thousands of times over the years

Each time the case contracts, the surface of the aluminium in the bore that houses the main bearing cup, which is a mediocre quality by today's standards, is slightly compacted.

It is like going over it lightly with a ball peen hammer.

Over the years, if you take out a cup and measure the bore it came out of, you will usually find it to be between 2.629" and 2.630" diameter

This means that when cold it will be the same size as the outside of the cup.

But if, when the cup is in position, you clamp a washer over the gland face of the cup to block off the oil hole, next put an air feed into the 1/8BSPP hole that the elbow goes in and put about 10 psi in, you will feel a little air loss to the inside.

Try with a gas lighter or match

Next heat the case till you can only just bear your hand on it, to simulate the temperature of the case at operating temperature.

You will now find a quite large blast of air coming out between the outside of the cup and its bore near the oil feed hole, which is no more than 1/8" from the back wall.

This is why old Scotts get very oily inside the case.

The fact is that at operating temperature, the rear half of the cup is no longer held, as the bore has expanded away from it and a gap of 0.002" to 0.0025" exists all round.

It does not sound much, but with hot oil, it is well enough for a good leak. I suppose we should then appreciate that less oil will get to lubricate our engines so we should set the feed from the Pilgrim till the exhaust smokes, then back it off a touch.

Scotts knew all about this problem, which is why they used a spinner to make that circular groove round the rear of the cup bore, but this was a forlorn hope and did nothing to help.





So what holds the cup in place if the rear portion of the aluminium bore is clear of the cup when the case is at operating temperature.

The answer is the Shrink Ring which being in a groove endways on, deflects the lip of the groove to "Strangle" the neck of the cup.

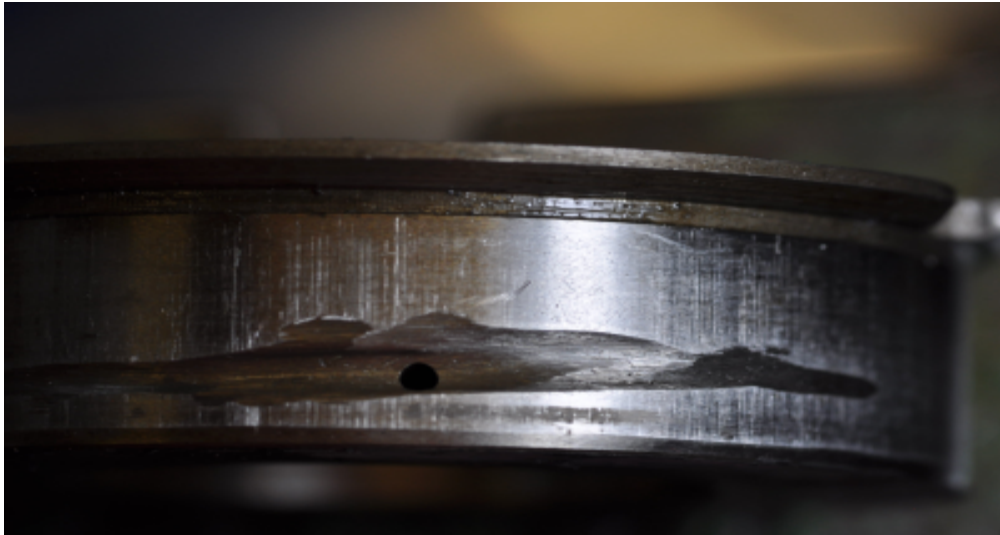
Although there is a slight loss of clamping over the years, it is this that holds the cups in place for almost all Scotts in service today.

I had a case from a customer recently and on testing for air leakage from the rear of the cup, found a positive gale

Previous to it being sent to me, another person had replaced the original cups with cups ground to 2.630" in original bores now compacted to 2.630" without re boring the case bores or removing the shrink rings, so that the grip that had existed by the shrink ring was shaved off. To make matters worse, this "Rebuilder" had tried to extend the pick up area round the input oil hole in the outside of the cup.

You will understand that there is an oil feed drilling of about 3/32" diameter down from the bottom of the 1/8BSPP hole into which the brass oil feed elbow screws. This drilling must communicate with the drillings in the hard steel main bearing cup. To make allowances for slight errors in radial position, a small groove is machined in the outside of the cup central to the oil receiving hole to route the oil to the hole in the cup, if it is not exactly in the correct position.

I will attach a photo to show the attention to this provision given by a previous person with an angle grinder in a non too steady hand. The slashing had actually allowed the oil to flow completely outside the rear of the cup and to flow in considerable quantities down into the case, rather than go to the main bearings.



#### An overview

We all, or most of us, have to work to survive and there is often a limit to what can be afforded. I can renew these problems, but to do it properly, I need time and the use of some specialised machinery, tools and equipment. I am not oblivious to the customer's need for economy, perhaps these cups which was only one part of a long tale of woe, was part of a search for a cheap solution. On several occasions, I have suggested that an owner sells his bike to a person who has the financial resources to have it repaired properly and to buy a more modest popular four stroke bike where spares and repairs are more affordable

#### What do I do

I drill a hole in the Shrink Rin to break it's grip and remove it.

I heat the case and remove the cups

I put a bespoke work holding fixture on to a Kearns S type horizontal Toolroom Boring machine. The case is clamped down using the same four bolting positions used to secure the block.

The fixture replicates the underside of a standard barrel, but even so, given the manufacturing tolerances, some fine final setting must be done.

The position of the existing bore is established and a long boring bar is used to bore through both bores at one setting.

A minimum amount of metal is removed to just clean up, as the surface layer of the original bore has been compacted and so this layer will be slightly more resistant to further compaction.

The Kearns S type machine has a facing head, so without moving the position of the job, I can face out and make a minimum clean up on the end abutment face on both the inner and outer end of the new bore and finish with a small chamfer.

Then fit a new tool with the shape of the shrink ring groove and take a minimum skim to clean up the clamping face for a new shrink ring

The only time I have to rotate the worktable, is to skim the shrink ring groove at the outer end.

The Kearns is an excellent machine for a thinking engineer and I first worked one over half a century ago. Of course, I have made all the tool bars and cutting tools over the years, so the job is known and proved.

Next demount the case and clean and define the exact sizes of the skimmed main cup bore and shrink ring grooves

Withdraw a pair of main bearing cups from stock and using a Jones and Shipman 1314 universal grinder made in Leicester, grind the outside diameter to give correct interference size to suit the new bore. The underside face of the lip at the mouth of the cup is cleaned up so that on fitting, this face will seat on the cleaned-up end face of the case bore that was done by outfacing on the Kearns S type.

Make positioning pedestal to radially time the cup and secure a cup to the end of a large aluminium holder / heat sink

I use a 50 year old Seivert petrol pressure brazing torch to put enough heat into each crank chamber half separately until the cup correctly guided can easily drop down on to its qualified end position.

Next measure the shrink ring groove inner diameter, as this size will now have changed and make new shrink rings.

The rings are heated till cherry red and dropped into the grooves

Next the case must be set up and the cups ground in situ to clean up, as they will now be oval and tapered.

Then, of course, the whole building process of making main bearing rings and setting end float. I use my own design here to eliminate the hard metal to metal gland that can give trouble if the flywheel tapers lose truth a little.

There is the law of diminishing return to consider in case the owner has a passion for Scotts and the funds to support it. A passion is where the cost and time are no longer considered significant. I suppose I am one of these, within my present resources, but my own engine cases and barrels are from modern high duty alloy LM25TF and these are machined to take ball bearing main bearings and use cranks with heavy metal slugs. Now this gives me pleasure and it was at my cost.

As regards a customer's job, I will do exactly what is needed to do the job properly. No more and no less! If a customer wishes to discuss the various ways to make his bike more efficient and smooth, then it is always a pleasure to make a good bike better.

The customer has the benefit of over half a century of precision engineering knowledge gained on defence, aerospace and other challenging fields as well as sixty years developing and racing my Scott, through which the various weaknesses have been identified and solutions devised.

Kind Regards

Roger

-----Original Message-----

From: scott-owners-club-australia@googlegroups.com [<mailto:scott-owners-club-australia@googlegroups.com>] On Behalf Of Mather

Sent: 05 March 2017 06:17

To: Scott Owners Club (Australia) <scott-owners-club-australia@googlegroups.com>

Subject: Replacement cups

Hi Roger,

The replacement cups sounds interesting. How do you manage to fit and secure them without re boring or removing the shrink rings?

Regards,

Bob Mather.

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