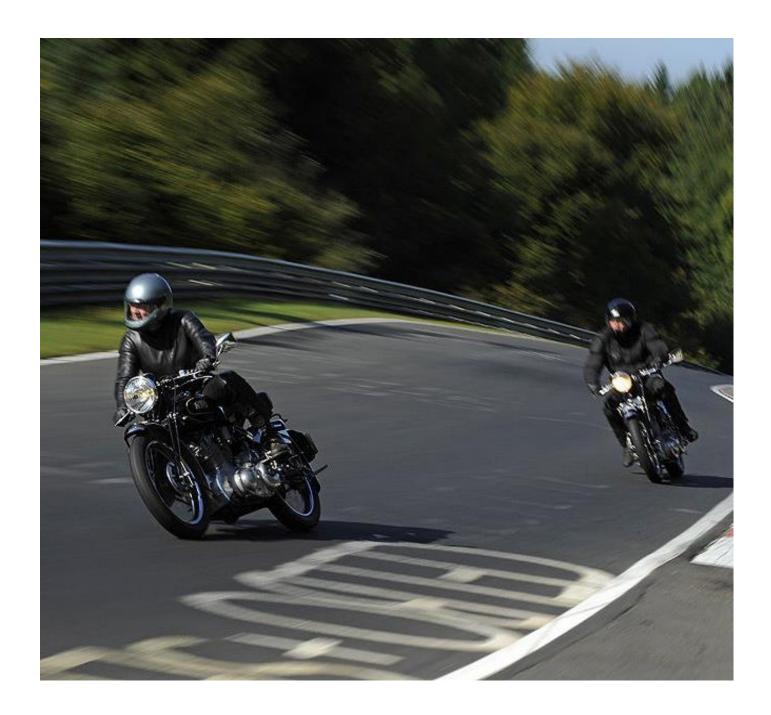


# The Oz Vincent Review

Edition #87, May 2021





Christian Jacoby on C Rapide behind Lennert Schultz of the VOC German Section on his B at the Nürburgring, Germany

Disclaimer: The editor does not necessarily agree with or endorse any of the opinions expressed in, nor the accuracy of content, in published articles or endorse products or services no matter how or where mentioned; likewise, hints, tips or modifications **must** be confirmed with a competent party before implementation.

**W**elcome to the latest edition of OVR. Hope you enjoy it!

Remember, to access the complete OVR archive from any device, just go to the OVR web site <a href="https://ovr270.wixsite.com/ozvincentreview">https://ovr270.wixsite.com/ozvincentreview</a>

Melbourne, Australia.

Email: <u>Ozvinreview@gmail.com</u>

#### **Letters to the Editor** (a small sample of what I received)

Martyn,

I've just been reading the latest OVR - splendid effort as always, thanks for making it available.

I noticed a very good article "How Does A Vincents Oil Flow" attributed to Chas. Blunt., and thought it seemed familiar. It turns out the majority of the text is identical to that in an article credited to Max Lambky, reproduced in the latest issue of "Stop!", the newsletter of the Chicago section.

It would appear that either Chas or Max (my guess is the former) is *not* the original author, so should be giving credit where it's due.

Cheers, Dave Hartner, USA

[OVR contacted Chas B who reluctantly agreed with Dave but asserted that the disputed article is his but that it included an un-attributed quote from the earlier one by Max]

Hi Martyn,

This photo was taken at the Vincent display area of the new US distributor for Vincents, Indian Sales Corp of Springfield Mass. Below Vincents elbow one can just make out a 5inch Black Shadow Speedometer and top of the fork and front wheel of a Shadow on display. Sales had a large display area as they had also become importer distributors for Norton, Matchless, Lucas, Amal, Blacknell Sidecars, and other UK motor accessory firms. The shows a sectioned Rapide Motor with PCV extolling its virtues. Note the early Bronze spoke form large Idler. Assuming this motor stayed in the US that indicates that Indian Sales Corp the new importer/distributor for all of the US had 2 sectioned motors. The 2nd is a sectioned Black Shadow motor that at one time Coburn Benson MTC. shop owner in Haverhill Ma. and Vincent specialist possessed the crankcases to. They likely came from Harry Bellville who purchased all of Indian Sales Corps Vincent inventory in 1955-56. Herb Harris in TX eventually assembled it after tracking down many of the original parts.



#### Hello Martyn,

I was surveying Yew Trees today in Essex, got into a discussion with a local at Hordon on the Hill, a small village in Essex England who directed me to the grave of the founder of Vincent motorcycles, thought I would send some pictures of the area for your readers,

Thanks, Paul Butterworth, UK









# What To Take On Tour

By Alice Leney, New Zealand

If you are going on a long journey with a Vincent, one can be wise to have a few spares along. The trick is not to have too much, but what you might need that you can realistically do on the road, perhaps with a bit of assistance such as in a small workshop provided by a friendly motorcyclist. Know Thy Beast has a very good list of what to take in Chapter 22 on Long Distance Touring, and this is an excellent place to start.

Having done 14,000 miles of mostly longer distance work in NZ on my Rapide - 'Melvin' - I had a reasonable idea of what we needed for the 2019 International VOC Rally tour. We did pretty well, with the notable exception of the gear-change spring; but aside from that, we pretty much had what one could reasonably expect one might need. I thought it might be useful to share this experience.

On Melvin's recent tour in Europe, the bottom part of the right pannier was dedicated to the spares dept. It was a section about 13in x 5in x 3in, so not huge. Most tools were in the tool tray, apart from tyre levers cable-tied to the crash bars, and a small Telcamet Grease Gun - for the Girdraulics - cable-tied to the pannier frame. A pair of sparkplugs were in a pouch tied to the back of the pannier, but the only time I took them out was to help out someone else get their Norton going. A small selection of nuts, bolts, washers, split-pins etc. were in a tobacco tin in the tool tray too. I mailed a set of tyres and oil filter to my friend in Sicily so I didn't need to carry them, 20-inch front tyres being hard to find, even a 19" can be a battle in Europe when you don't know your way around.

The following were the parts carried:

- Automatic Timing Device assembly;
- Two rear wheel spokes;
- One wheel / RFM bearing;
- Two kick-start springs;
- One exhaust pipe sealing ring;
- Crank drive side oil seal and circlip;
- Two oil line banjo seals;
- Inspection cap seal ring;
- Gearbox index plunger spring;
- One each of two Gearchange springs (only after we broke one in Spain and had to get it sent out!);
- Set of points complete with plate;
- Blade fuses;
- Exhaust valve and spring;
- Clutch cable;
- One throttle cable long one (Melvin has a twin pull throttle);
- Kick-start ratchet pinion;
- 1 push rod (Marcus gave it me, told me I should carry one, so I took note);
- 1 tank bolt;
- Selection nuts, washers, bolts;
- Extra link for rear chain plus split link (for use with 50T sprocket in mountain areas, frequently used;
- Rear Chain;
- 350 x 19 inner tube (fits the 20in front tyre too better than using a 21" which will crease).

That might look like a bit of a list, but it actually all packs up pretty small. What did I actually use? Both spokes (wheels are original), one kick-start spring, one of the gear-change springs; an oil filter; extra chain link, the rear chain, inner tube (several times), one oil line banjo seal.

Special Tools carried were as follows, and most went into the Spares Dept too:

- Clutch nut socket ½" W;
- Piston stop set at full advance point plus a plastic wedge to hold the ATD at Full Advance
- this makes roadside timing easy;
- ESA nut socket ¾" W;
- ½ drive tommy bar fitting for the sockets, but no bar, you can use something else;
- Primary drive locking plate;
- Needle files:
- 1 small half round file:
- 1 small flat file;
- Puncture repair kit;
- Tyre levers;
- A bit of Knead-It epoxy;
- Cable ties:
- Fire Extinguisher (looks like a flare, got it in Austria on the way back once the petrol tank leaks got severe!);
- small set Feeler Gauges;
- Small Telcamet Grease gun;
- Very small piece of whetstone to polish points;
- Tins of chain spray (several used).

**What of these did I use?** The primary drive locking plate (to fix someone else's bike - but very useful when you need it) the files, the puncture repair kit and levers; the feelers, polishing stone, cable ties, Knead-It, grease gun – for maintenance.

A couple of other general points that may be of interest if you are planning a big trip: I got about 5,000 miles from a set of tyres, (about the same as NZ incidentally) although one of those horrible square Avon SMs will do about 6,000 miles on the back. Oil consumption was carefully monitored to keep an eye for impending trouble; plugs used were NGK Iridium BR7EIX and went the whole distance with only a couple of quick cleans at maintenance time. Ignition is standard magneto.

**Maintenance:** Adjusted the Primary Chain twice; Never took the magneto off; polished the points three times with the stone; checked dynamo brushes once; oil consumption 730 miles per litre, which is 3,250 mpg or twice riders handbook; had six oil changes running 15W-40 diesel engine oil, whatever I could buy that looked OK. I sprayed chain spray on the rear chain every morning before setting off: sprockets are still very good after all that time, and we did run significant distances with the 50T low gear sprocket all through mountain areas; had a (good quality) 9,000-mile chain on when we started and changed it about half way through the trip for a new one. Shed the chain once (through my own stupidity) and bent it, so having a spare was important. If you started with a new chain a good second-hand one would do for spare. Greased the Girdraulic forks three times, with molybdenum grease (having the gun also is a source of grease).

What I should have done but didn't: Should have put new brakes shoes all around and a new rear chain at the start, as brakes were well worn out at the end. Should have made two new throttle cables instead of one at the start, as the older one that has now done 30,000 miles plays up in the wet. I carried the replaced one as a spare. A decent Bicycle pump is essential: I thought I had one as a fancy modern wee thing from a pushbike shop, but it was not up to it. Ended up with a

traditional €2 Chinese special, but it fell to bits in the end. I didn't spray the speedo drive gear with chain spray as is my normal practise every time I have the front wheel out (cleaning up excess of course) and the speedo drive was well flogged out after 14,000 miles whereas the same distance in NZ with regular maintenance it had been fine: these were old parts from the seventies at latest, no plastic gear wheel.

**Fuel and tuning**: The variety of fuel one encounters can be challenging. France was difficult with much E10 (10% Ethanol) but not often marked as such. High temperatures also made this E10 stuff harder to work with. Cross a boarder and the fuel is different: this made me reluctant to start serious tuning adjustments as a few days later one would start all over again. E5 was pretty benign; didn't have any problems with melted fuel hoses, did coat the fibreglass petrol tank with Caswell liner before starting, but it had a series of troubles unrelated to this. Altitude proved no problem with the Concentrics being used, with heights over 2,500 metres being encountered.

**Costs:** Around NZ\$4000 shipping to UK and back round trip; £268 fully comp insurance from the UK, included a Europe wide breakdown cover. Hotels in Europe ranged over a high of €68 in France to €23 in Slovenia, typically in the €35-50 range. Continental Europe touring budget worked out at about €100/day averaged over 92 days.

Those who read the fine print in their MPH will see that Melvin won the Ken Pettiford Bowl for 2019, being for the best touring effort on a Vincent that year. And he has never been 'Restored'. Maybe something in that ........

This item was first published in NewZ, Jan-Feb 2020, the magazine of the VOC New Zealand section, and is reproduced in OVR with the generous agreement of the Author.

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#### **OVR Event Schedule**

Date	Event	More Info	
May 16	VRV/VOC Day Ride – Mount Macedon Region	https://secvrv.wixsite.com/vincent	
July 18	VRV/VOC day ride to Noojee	Sec.vrv@gmail.com	
Sept 12	VRV/VOC Day ride thru Gippsland	Sec.vrv@gmail.com	
Sept 20-24	Australian National Vincent Rally, South	vincenthrdclubsa@gmail.com	
	Australia		
Sept 26	Bay to Birdwood Rally, South Australia		
Oct 24-26	MotoGP at Phillip Island, Victoria		
Nov 19-21	VRV/VOC Annual Tour	Sec.vrv@gmail.com	
March 2022	Combined VOC/VOC Black & Gold Rally	At Lakes Entrance? In planning –	
	(Vincent & Velocette)	TBA, open to VOC members only	
March 2022	Tour around Tasmania	www.tassietour.info	



#### 17th and 18th July 2021

- Bourbon L'Archambault. Zip: 03160;
- Surrounded by beautiful countryside;
- Visit: https://tinyurl.com/yxtfofhx https://tinyurl.com/yynjhppm
- Traditional French entertainment;
- Magical fiesta Saturday night dinner;
- Campsite Website:

https://tinyurl.com/VOCFrance21

- Rally fee approximately €63;
- Limited places available;
- See page 30 for contact details.



# THE Amal Monobloc

Carburettor was a standard

fitment on British and many European motorcycles from 1955-66. Its unit construction of mixing chamber and float bowl tidied up the earlier standard Amal carb and eliminated a number of potential leaking joints at the same time.

Whilst generally referred to today simply as a 'Monobloc', there were in fact three distinct types of this carburettor all sharing the same features, but of different physical

sizes. Within these three types lay a further division in the range of bore sizes, which made the Monobloc suitable for a wide variety of two- and four-stroke engines from 175 to 1,000cc capacity. If you are faced with restoring one of these instruments today, or are attempting to build one up from scratch, a knowledge of the constructional features will be a great help.

The three Monobloc ranges are Types 375, 376 and 389. Bore sizes within each type are:

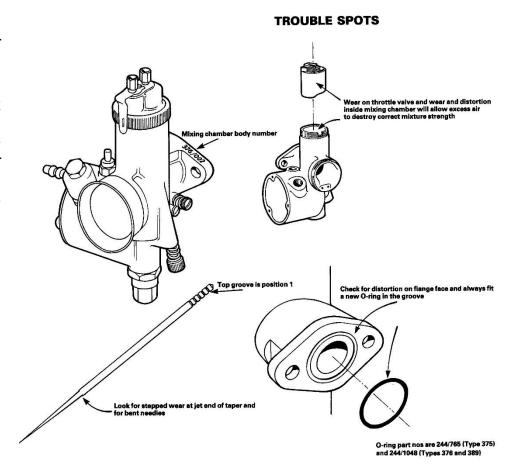
**375**: 21/32in, 23/32in, 25/32in, 13/16in, 7/8in;

**376**: 15/16in, 1in, 1-1/16in;

**389**: 1-3/32in, 1-1/8in, 1-5/32in, 1-3/16in.

As the selection of the carburettor for a particular machine was the result of close work between Amal the manufacturer, and road-going every motorcycle thus equipped has a known carburettor specification to go with it. If you do not know the requirement for vour model, it shouldn't be too difficult to find it either through the maker's handbook or one of the carburettor parts suppliers.

Amal Monobloc specification numbers always start with the type number, i.e. 375, 376 or 389, followed by a further series of numbers identifying the actual



specification. Quite a number of the components for these carbs are common across the three, and if you are picking up bits at swap meet you will find that the Amal part number is stamped or marked on the majority of parts. Main jet (376/100) and holder (376/073), needle jet (376/072) and pilot jet (376/076) are examples of common parts through the range, whilst slides, needles, jet blocks and mixing chamber bodies vary according to type.

The exploded drawing gives a good guide to the Monobloc assembly, with the Amal part numbers included. Thanks to the upsurge in interest in classic motorcycling in recent years, availability of Monobloc spares has been maintained with one major exception — new mixing chamber bodies are no longer available as a spare part. These bodies were made from a zinc-based alloy and after twenty or more years of use are prone to distortion and wear, both leading to poor running of the engine. The answer is to have the body overhauled by a specialist or locate a replacement at a swap met. This is where good knowledge of your particular carb specification comes in handy, because you will need to look for the correct body. Body numbers are stamped on the top right hand face of the fixing flange and are clear to see. Let's look at a typical fifties' example, say the 350 Ariel Red Hunter, which from 1955 to the end of its production was fitted with a Monobloc type 376/8. The specification of this carb breaks down to:

Mixing chamber body no. 376/002 Internal bore 1 inch Jet block 376/056 Main jet 200 Pilot jet 25 Throttle valve (slide) 376/3 1/2 Needle 376/063 Needle position 3 0.106 Needle jet 376/090 Banjo

If your mixing chamber body is beyond recovery or missing entirely, the key to your search then becomes part no 376/002 on the fixing flange. This might not be as difficult as you would first imagine, as this same part number was also used on the AJS and Matchless 500 and 600cc twins, the 500cc Ariel Fieldmaster twin and the 600cc VB side-valve single, the 350cc BSA B31 and 500cc Dominator twin, 350cc Panther Model 75 and 350cc Royal Enfield Clipper. These commonalities appear from a quick flip through the Amal sheets and are by no means the only ones to be found, so look around.

The point to emphasise is that we are only talking about the mixing chamber body — you must then assemble the correct specification for your particular model (in our example the NH Red Hunter) from the settings list. The jet block must be correct for the carburettor type and for the cross bore size (21/32in up to 1-3/16in); again, with the part number you will have no difficulty in sorting this out.

The main jet which controls the petrol supply when the throttle is more than three quarters open is calibrated and numbered; the higher the number the bigger the jet. The number on the jet records the flow capable of being passed through the orifice in cubic centimetres per minute, i.e. 200 for our Ariel example. If you should need to experiment with jet sizes for any reason, never tamper with the original — buy the next higher or lower number as appropriate. Needles and needle jet are better replaced as a pair, as wear can accumulate on both items.

The standard size of needle jet is the .106 and they are not usually stamped with a reference number. Alternative sizes (e.g. .105, .108) always are, so if you have an unmarked one it will be a .106. Needles vary for each Monobloc type and may be marked with a code letter. B identifies the type 375 needle (375/063), C the type 376 (376/063) and D the type 389 (389/063). In addition

there are special needles for one or two makers' applications and also jets and needles for alcohol fuels. The position of the needle in relation to the throttle opening is set by means of the jet needle clip, in one of five groove positions on each needle.

Our Ariel example gives needle position 3; the point to remember is that position 1 is always the groove nearest the top of the needle. Throttle valves, or slides if you prefer, have a cutaway on the air side to create a depression over the fuel jets. Within the effective range of control of the throttle valve cutaway (1/8 in - 1.4 in throttle opening), the amount of cut-away is measured in sixteenths of an inch and is shown as a number following the valve type, i.e. 375/3 will be a type 375 valve with 3/16in cutaway. The higher the number, the larger the cut-away and the weaker the mixture.

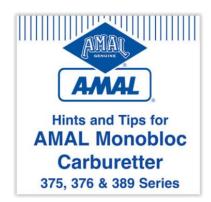
Float needles were originally of all nylon construction, but following some instances of sticking inside the needle seating, an alternative brass needle with a neoprene tip was made available, and you can still obtain either type. Our Ariel fuel pipe banjo (376/090) was to suit a screwed nut fixing from the petrol pipe, but the push-on flexible pipe type (376/097) could be adopted if you were not too worried about originality.

In "The Original Vincent Motorcycle" by J.P. Bickerstaff the following information is presented in regard to these carburettors, which are a standard fitment on "D" series Vincents

	Black Knight	Black Prince
AMAL Model	376 monobloc	389 monobloc
Bore	1 -1/16"	1- 1/8 "
Main Jet	220	250
Needle Jet	376/072	376/072
Needle	376/063	389/063
Needle Position	2	2
Slide	4	4

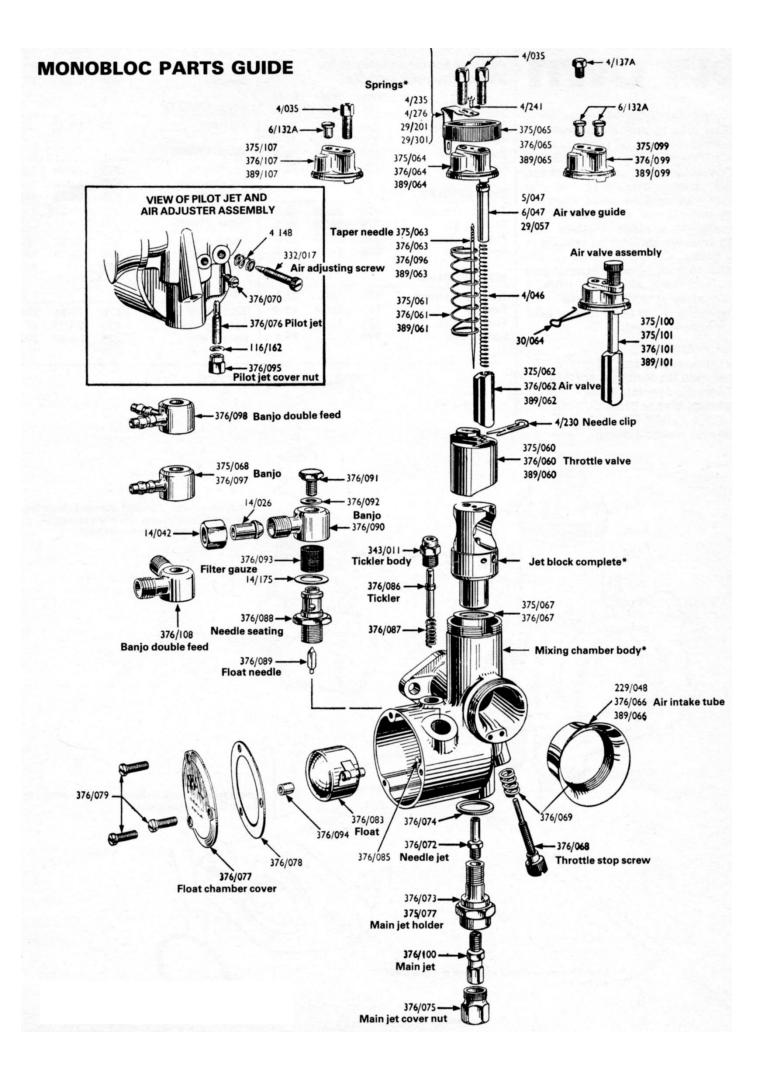
In "Know Thy Beast" Stevens makes the following observations in regards to D series Vincents. "The standard pilot jet was number 30 but it is possible that with this size some trouble may be experienced in getting the engine to settle down to a reliable tick-over. A number 25 pilot jet should cure that fault. The main jet can be increased to a 240 with the 376 unit or a 270 with the larger bore 389 unit."

We are fortunate that a full range of Monobloc carburettors and spare parts remain readily available from Burlen Fuel Systems Ltd in Wiltshire, UK. You can visit their web site at this link <a href="https://burlen.co.uk/">https://burlen.co.uk/</a>



There is a comprehensive guide to setting up and tuning these devices on the Burlen site, download from here: <a href="https://amalcarb.co.uk/downloadfiles/amal/Mono\_Hints\_and\_Tips.pdf">https://amalcarb.co.uk/downloadfiles/amal/Mono\_Hints\_and\_Tips.pdf</a>

Erratic running, poor starting and performance will all result from a worn carburettor, and yet there is no need to suffer them at all if your bike has a Monobloc fitted.



# RALLY AT LLANELLY

Every year in March the Bendigo Historic Motorcycle Club holds its "Girder Fork" Rally. The epicentre is the old school house at Llanelly near Bendigo.

Having family commitments on Sunday I elected to go up with a mate on the Thursday, taking my Rapide and mv В iust Commissioned Roval 1937 Enfield Vee Twin. Being there on the Thursday would give me the opportunity to further shake down this interesting bike. The the only complete and running example of this RE model in Australia, at 1140cc it remains motorcycle the biggest produced in Britain to that time, however, this machine will be a



subject for another article at a future date.

Llanelly is an old gold mining town in the golden triangle of Victoria and like all the towns in this region it predates the founding of Melbourne.



There is not much left there. just a few houses and the old School House. This building is owned by the State Government but is under the care and control of the Bendigo Historic Motorcycle club as the Government happy to have this historic building cared for. However, it is a superb venue for a Rally. The BHMCC charges a modest fee and for this one gets proper country grub, old fashioned roasts with veg ,trifle for desert and more. Accommodation is what you make it, one can bunk down in the hall, there are a few caravans available, you can park your RV or just plain old camp, which is my choice.

This event pulls in bikes from both the City and surrounding Country areas so there is the chance to see some very interesting kit. One of my Favourites was an Australian built "Howard" Side Valve Engine [originally designed to power cultivators and Rail Cars. ] This imposing lump had been shoe horned into a prewar BSA frame, but so well constructed that it could easily be taken for a production machine, a very nicely presented bike. Another rare bike was a Pre War 4 Valve Royal Enfield Bullet, I never knew they made such a thing.

To be honest, the roads around these parts can be a tad rough. Both bikes presented challenges, the Enfield is so long that when the front hits a sizeable bump, one has time to tense up whilst awaiting the arrival of the rear wheel at the same bump. Mind You, the "B". Rapide isn't exactly the last word in cushioned comfort either, I had a Prostate rebore recently and riding the Vin was no picnic. There is a company in England that makes a Hydraulic Spring/ Damper unit to suit the Bramptons which is on my list of things to check out.



Frank Trento was present on his immaculate "A" Series Replica which attracted a great deal of attention. Neal Videan and Rodney Brown, who were the creators of this particular replica have done an outstanding job, you need to look very closely to differentiate the bike from an original.



There were a sprinkling of other Vincents there as well though I never had the chance to speak to the riders.

It was also refreshing to see a goodly number of younger folk and children. There was a 1920's Indian Chief outfit present which has been in the same family since new, It was loaded up with Both Parents and a couple of kids, and doing a sterling job filling its original design brief.

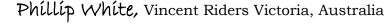
The Saturday Ride took in the Eddington Car Sprints. I believe this event is not well advertised but it was very well attended and a visual and aural treat for any dedicated Petrol Head. My personal favourite was an

open Cockpit Super Charged Rolls Royce from the twenties.

There was a half day run and lunch on the Sunday.

It always surprises me that this BHMCC Venue is not better known in the old bike movement, As Rallies go, this one certainly punches above its weight and It is to be thoroughly recommended.

Put it on your calendar.





# **UPDATED** - Installation Sequence for a Comet Timing Chest.



# Updated With Corrections to Thrust Washer Details

From my review of available literature, the original configuration is as follows, identifying components starting at the inside face of the timing case and ending at the inside face of the steady plate. In an ideal world you set up the spindle heights when the engine cases are separated and where you can gently and evenly heat the cases to around 200 degrees C to allow spindle heights to be adjusted. But for the home workshop this is frequently not possible SO before you start you need to check and record the height of each spindle relative to the steady plate.

#### 1. Spindle Height Measurement (updated)

Get a good straight edge and place it across the outer face edges of the timing case, then measure from the straight edge to the shoulder on each spindle, recording the result. For a true flat install of the steady plate, all spindle shoulders, with as applicable thrust washers ET98/1 and ET173 in place, should be the same height. It is not the absolute height that matters, what matters is the heights relative to each other. It is not practical to attempt to alter the height of the Idler Gear Boss Assembly so the height of this will be the reference for the height of all other spindles. Identify the height of the Idler Gear assembly spindle and then calculate and record the difference of all others to that. When you come to installing the steady plate you may need additional 5/16" and possibly ¼" ID shims equal to those differences, to be placed just before the steady plate goes on.

#### 2. Large Idler

First is ET51/2 Idler Gear Boss Assembly, which is held in place by 3 off ¼ inch plain washers #92 and 3 off ¼" BSF nuts #91. Only If using alloy large idler fit ET173/1, else leave this thrust washer out. Next is the large idler assembly. Then ET173. And eventually the steady plate.

**3. Inlet Cam Follower** - Hint: before installing the cam followers put gloss white paint (nail polish?) around the outer edges of the pushrod cup to better see it when installing push rods as you peer down the pushrod tubes.

First is ET98 thrust washer; Then ET29 cam follower; Next is ET99, the cam follower spacer, inlet; Then ET98/1 thrust washer; And eventually the steady plate

**Note re ET95 & ET98:** It is bad practice to have a rotating or rocking part in direct contact with the alloy timing case inner and it is for that reason that ET95/98's are used – to protect the timing case inner from wear.

#### 4. Exhaust Cam Follower

First is ET98 thrust washer; Then ET29 cam follower; Next is ET99/1, the cam follower spacer, exhaust; Then ET98/1 thrust washer; And eventually the steady plate

#### 5. Camshaft

First is a E95 thrust washer; Then the ET47/1RS, 2RS or 3RS camshaft assembly; Followed by E95 Thrust Washer; Then ET98/1 thrust washer; And eventually the steady plate

#### 6. The cam followers

Should run central on their respective cam lobes. If they do not then the cam followers need to be shimmed so that they are. If you do alter the cam follower shim arrangement be sure to make the same shim thickness change on both sides of the follower, add in to one side and deducting from the other side.

#### 7. Small Idler E50/4 that drives the magneto.

First on is a E95 thrust washer; Next is the small idler E50/4; Then ET 173/1 thrust washer; Followed by ET173 thrust washer; And eventually the steady plate

#### 8. Breather

First installed is a E95 thrust washer; Then the ET141 breather assembly; Followed by a E98/1 thrust washer; And eventually the steady plate

#### 9. Steady Place Distance Piece

There are 2 of these (3 in a twin), installed without any shims, however. If the distance pieces are too long to allow a flat steady plate install a bit of careful filing will reduce the length. If they are too short ¼" ID shims will be needed.

#### **Thrust Washer Details (updated)**

E95	½" x 3/8",	nominal 0.025" thick	4 pcs
ET98	5/8" x 3/8"	nominal 0.025" thick	2 pcs
ET98/1	5/8" x 5/16"	nominal 0.025" thick	4 pcs
ET173	1" x 5/16"	nominal 0.070" thick	2 pcs
ET173/1	7/8" x 5/8",	nominal 0.027" thick	2 pcs with alloy large idler only,
			else just 1 pc.

#### **Additional Shims**

In Australia, steel precision shim washers of all required ID's and in thickness from 0.004" upwards are available from

Precision Shims in Melbourne <a href="http://www.precisionshims.com.au/">http://www.precisionshims.com.au/</a>

And also from Small Parts and Bearings, in Brisbane

https://www.smallparts.com.au/store/partslist/washersflatcarbonspringsteelprecisionshim/?

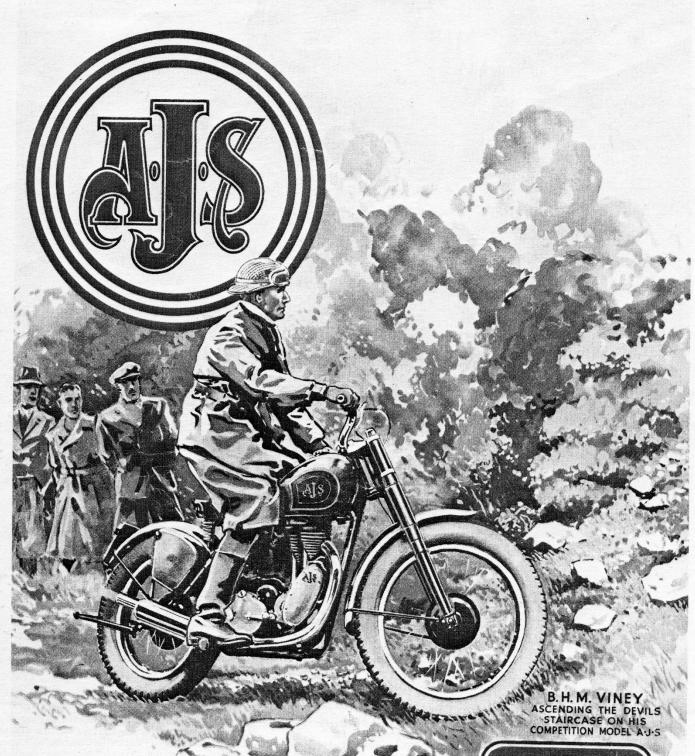
#### **BUT**

**10. the end float of all** needs to be set with shims on the underside of the steady plate side to give an end float of 0.004" to 0.008" **EXCEPT for the breather** that requires a <u>minimum</u> end float of 0.015".

**To check end float**, install the components in the sequence listed but in place of the steady plate fit a large OD 5/16" washer and then the retaining nut then measure and record the end float. If it is outside of the desired range add or remove shim thickness adjacent to where the steady plate would be. If the end float is too tight you have to draw the spindle out slightly which is done by putting large washers on the component, then using the spindle nut as a puller works great. But you will need to subsequently repeat step 1.

**11. Steady Plate** The final step is to install the steady plate but not before you have placed any required ADDITIONAL shims up against the underside of the steady plate that you identified through the process.





# The Obvious Choice for Trials + Scrambles

10 TIMES MEMBER OF BRITISH TEAM INTERNATIONAL 6 DAYS' TRIAL

A-J-S MOTOR CYCLES

ROAD

LONDON

# Working At Scotts

Penned by R. Coates in 1971

DURING my apprenticeship in the service department of a Bradford car factory (writes R. Coates), an interest in motorcycles grew to the point where practical experience became essential. At the time, the RAC-ACU training scheme was in operation in the grounds of Odsal Stadium, with instruction from members of the Bradford and District Motorcycle Club, and a course of weekly lessons fanned the flames of interest further. A job connected with motorcycles seemed a must.

In the summer of 1949 an interview was arranged with a view to obtaining a job at the Scott motorcycle factory at Saltaire, a short bus ride from my home. I was interviewed and hired as an "improver" at 35 shillings a week and told to start work the following Monday, by Harry Langman.

As I stood looking at the scene in the fitting shop on that first morning, my feelings of anticipation and excitement ran very high. The fitting shop where the new machines were built was a rectangular area with benches lining the long walls, the floor space between being occupied by lower benches on which the bikes were assembled. The faraway left-hand row of benches was broken by the stores counter, while at the far end stood a desk from which Harry Langman supervised the work in hand, the desk area being decorated with old photographs of Frank Varey in action on dirt track Scotts and Langman and crew in the sidecar TT.

Against the end wall stood a stack of main castings for the defunct three-cylinder engine, partly machined. The right wall was formed by a low partition separating the fitting shop from the machine shop. The rectangle was completed by the wall of the test house. The shop area was ordered and tidy and without clutter. Flying Squirrels in various stages of completion were being worked on.

This is the place, I thought. Here is where I learn something about motor-cycles. "I'll put you with Jack", said Langman, "and we'll see how you get on." And so it was. Jack turned out to be a small,

softly spoken man who covered his thinning hair with a cloth cap, so dirty as to be of no particular colour. There was a matching raincoat. He smoked a short with filthy pipe enjoyment, spoke rarely but thought plenty, disapproved of incompetent youths. He had a great passion for trials riding and for this, used a heavily modified 16H Norton sidecar outfit, of which he was very proud.



Jack was nicknamed "Massey Harris" by his fellow fitters, a name which meant nothing to me at the time. My first job was to assist him in the completion of a top overhaul on the engine of an ancient Fordson tractor which lay under a lean-to building, in the yard. Once mobile again, Jack got aboard and said he would "tek it t' t' farm" and drove off through the factory gates laying a trail of paraffin fumes.

Enquiries about the farm brought plenty of knowing looks, half smiles and no information. Next morning I clocked in at the factory to be greeted by Jack. "We'll go and do a bit then. Fasten thi

coit." Outside we got aboard his trials outfit and set out for the farm, which turned out to be at Yeadon.

Once there, we rode down a lane to a large shed wherein stood a Massey Harris combine harvester, very much the worse for wear. The nickname born by Jack was apt. He knew that combine to it's last spring washer as well as all the other farm machinery, from the cream separator in the mistle to the grass drying plant in the Barn.

The daily ride to the farm became a routine, as did the mid-day ride into Yeadon town for lunch.

Once serviceable, the combine was driven to some fields of corn which lay between Esholt Avenue and the River Aire (this being the venue of the Bradford Club's Esholt Sprint) where the work of harvesting the corn began, Jack driving the combine while a farm hand and myself bagged the corn as it gushed from the hoppers. The full sacks slid down a chute on to the stubble left by the whirling blades of the harvester. It was hot, dusty work and there was time to ponder its relevance to the business of screwing motorcycles together.

My parents muttered darkly about "cheap labour", and one afternoon I spoke to Langman about it. "If you've had enough, you'd better come inside". So ended the brief association with "Massey Harris". The following Monday morning I was allotted a bench next to the spares counter. Langman produced two sets of frame lugs together with several files and sheets of emery cloth. "These lugs will be for the Show 'Bikes, and I want them nicely cleaned up. See what you can do". And so I learned what a lot of malleable iron there was in a Scott frame, the steering head lug being particularly heavy. Those lugs were cleaned with a will, the work a pleasure after the meaningless farm interlude.

It was a pleasure to be working at the centre of things with new engines and new 'bikes being built and tested before my eyes. I was very keen to do some engine building, but it was soon clear that progress would be very gradual in this direction. All the 596 c.c. engines were built by one man, as were the small Cyc-Auto engines or MAJs as they were called. This being a factory abbreviation for Motor Assisted Junior. I made a start working on these engines, simple tasks such as cleaning the casting flashings of the cylinder barrel and ports, tapping the holes for manifold and cylinder-head studs and fitting them; de-burring crankcase halves ("Frazing" was the factory term) and cleaning up the outer surfaces with rotary wire brush. This last was done in the frame shop on a suitably adapted pedestal grinder, the machine standing next to a much larger version which carried emery bobs and felt mops for polishing aluminium castings or steel components for plating.

The man who did this work was a cheery sort who seemed permanently coated in filth composed of powdered aluminium mixed with the soap which he applied to the various mops etc. He wore a huge apron, a filthy black beret was pulled down to his ears, and goggles and heavy gloves completed the ensemble. When the goggles came off, startling clean areas of skin produced a comic effect.

Nearby was the brazing hearth with frames being built. Another area saw fuel tanks being soldered together and another produced exhaust pipes from lengths of tubing. At one end of the shop was the stove enamelling vat with frames and tanks hung dripping before the baking process.

Hung up for all to see was a large oil company poster showing in pictures how Harold Daniell did his 91-m.p.h. lap of the TT circuit. The man who coined "hive of activity" could have been inspired by the frame shop at Scott's.

After cleaning, the crankcase halves were placed in a circular electric muffle set in the floor of the heat treatment department and heated to a set temperature. While this was going on one went to the stores and drew the required number of main bearings. Once one had set these out on the bench the hot crankcase halves were retrieved from the hardening shop, carted smartly to the bench and the main bearings fitted.

Another essential task was alignment of the connecting rods, this being done with mandrels, vee-blocks, surface plate and dial indicator in the best "Tuning for Speed" manner.

Each completed engine was run for a period in the test house at varying throttle openings, one listening closely to the exhaust note in case an engine might "tighten up". Entry to the test house was via a heavy sliding steel door, so thick as to be virtually soundproof, and of course flameproof. It was a large oblong room, dimly lit by a few dirty windows set high in the outer wall, this wall also having a large extractor fan set in it, also very highly placed. Ample electric lights coped with the gloom, and there was one test bench for the 596 c.c. engines and a group of fair for the MAJs, these being placed along the outer wall. The opposite wall had benches along it and there was over-head ducting and piping for cooling air and water. The floor was black and rather slippery with the collected oil of years of testing. Indeed the whole room had a film of oil on it. There was a permanent two-stroke odour in the atmosphere even after several days' disuse. The slightly oily aspect was largely due to the test procedure used with the 596 c.c. engines.

Before these were run under load, they were first motored for a period with no sparking plugs fitted. A carburettor jetted to pass light oil was used. On entering the test house while a Flying Squirrel engine was undergoing this motoring treatment, one had to sidestep two long conical jets of oil vapour blasting from the sparking plug holes, to the accompaniment of a noise like a constant speed football supporter's rattle. The atmosphere was a haze of oil vapour, the extractor fan being unable to cope properly with this attack on its capabilities.

While the test house may not have had the operating theatre aspect of some facilities, it was clear that all engines built at the Scott factory were nicely put together and properly checked over before being fitted in a frame. Another test bench which might have boggled a mind or two, was that which stood outside the test house, overlooking the railway. Standing about chest height, it was an angle iron structure made to support an MAJ engine. Fuel supply was from a jerry-rigged autocycle tank. The threefold requirements of starting, cooling, and providing a load for the engine to work against were met by a cut down twin-bladed airscrew, about two and a half feet from tip to tip. This looked exactly like a first world war Sopwith Camel item, but it probably had Flying Flea origins.

It was interesting to see this test rig in use, the prop being vigorously swung to start the engine in best RFC style, the blades vanishing in a faint blur as the engine fired and revved up. This test facility was used mostly by the Service Department. Testing of completed Flying Squirrels was done by R.W., a Scott man if ever one lived. He was, and God willing still is, a small man with a ruddy complexion, thinning dark hair and a cheerful dis-position. When riding he was troubled by watering eyes, and he despaired of finding goggles which would provide a complete cure. On returning from a test ride, the first move was the drying of tear-streaked cheeks and the wiping of red rimmed eyes. Clothing was always a big, full-skirted coat, a short length of towelling round the throat, and gumboots if the weather was foul. No headgear; gloves sometimes. If comedian Jack Benny be the master of the "slow burn", then R.W. had the look that could kill.

This was applied one wet and cold November day to a man who suffered a Near Miss while walking towards the test house door. R.W. returning from a miserable test ride was lucky to find the shop door propped open, and chose to ride straight into the fitting shop. Near Miss was suddenly confronted by R.W., standing on the footrests and using some body lean to make the 90 degree left turn into the shop. More body lean saved the situation for Near Miss, who became pale. He stood alongside as R.W. switched off the engine and dismounted. In a voice loaded with sarcasm he asked, "What's this then, the Scottish Six Days?"

Rainwater trickled from R.W.'s hair down his face, it dripped from the skirt of the big coat which was black with rain. "Aye", replied R.W., but the look he gave Near Miss said much more. As with many short men, R.W. was very strong, having superb forearms in particular. When a batch of bikes were to be built, R.W. had the job of fitting tyres and tubes to the wheels, and this he did with the help of a cut down oil drum to support the wheel, and his bare hands.

He was proud of his ability to do this work without tyre levers, and the time taken per wheel was very low. Strength and the occasional choice oath got the job done. Tyre levers were nearby, but were eyed with scorn. It had to be a very stiff cover indeed before R.W. reached for the levers. So short was he that test machines were started up on the centre stand, and he always tried to avoid stalling while riding in traffic, his inside leg measurement making restarting astride the bike an awkward matter.

R.W.'s personal transport was an elderly Scott sidecar outfit of which he was very proud. One fitter owned a nicely rebuilt 1939 Triumph Tiger, 100, this being regarded scornfully by R.W. as a "foreigner". Impromptu drag races between the machine and the R.W. Scott outfit were a frequent occurrence at the end of the day's work, the distance being measured from the factory gates, up the hill to the Saltaire roundabout, and sometimes through Shipley and beyond. Other employees' machines included more Scotts naturally, and competition models by AJS and Royal Enfield.

There was a nicely kept vintage AJS vee-twin outfit having a wickerwork sidecar body with a high vertical wind-screen supported by bracing wires. In the first weeks of 1950 endless rumours circulated about the future of the firm, and a gloomy atmosphere took a firm hold in the factory.

Although a bench in the fitting shop carried a nicely enamelled prototype pivoted rear fork frame, perhaps intended for the projected three-cylinder model revival, it was clear this machine had little chance of being completed. Coinciding with this period was my impending call up for National Service, and I decided to beat HM Government to the draw by volunteering for regular service in the RAF.

And so it was. I left the Scott factory in February, joining the RAF in March. I had to visit Scotts in late April while on my first leave and found that it was all over bar the shouting. Many familiar faces missing, few sounds from the machine shop, sadness.

Some six years later, a civilian again, I got a job as a centreless grinder at the old Scott factory which was run then, as now, by the Hepolite piston people. Naturally there were many changes. What had been the stores was now an inspection department. The old heat treatment department was now the tool store. Not much change in the canteen. The spring-loaded entrance door still banged shut with the sound remembered from six years earlier.

And to my surprise there was the old desk used by Harry Langman, now in daily use by the grinding section chargehands. No mistaking the high backboard which had carried the old photographs. Still the same colour, dirtier and more battered of course. But to see that ancient desk again was like meeting an old friend.

This item (above) first published 1972 in "Motorcycle Sports"

# Epilogue:

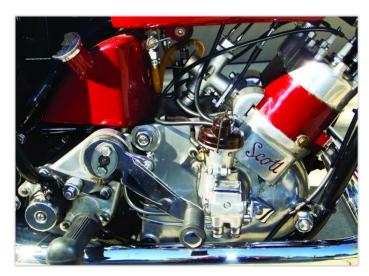
In 1950 the Scott company went into liquidation and was acquired by Scott enthusiast Matt Holder's Aerco Jig and Tool Company in Birmingham. From his premises in St Mary's Row, Holder, who was an expert silversmith initially continued to build the same model from Shipley-made spare parts. These "Birmingham Scotts" remained available into the 1960s.

In 1956 Holder began development of a 596 cc model

The chassis used a double-cradle frame. The front fork was conventionally telescopic, and the rear swinging fork had a pair of shocks, Girling or Armstrong, depending what



was in stock, with three-way spring preload adjustment. The front brake was exceptionally strong, being full-width 7-inch drum with four shoes, having a single-leading-shoe operation on each side; the manufacturer understood that a two-stroke offered little compression braking. The rear single leading shoe was cable operated. The wheels were both 19-inch, with a 3.25 tire on the front, 3.50 on the rear. Wheelbase was a longish 59 inches, and weight with four gallons of gas in the tank was nearly 450 pounds, a little heavier than a contemporary Norton 600 twin.



All quite conventional. Except for the engine, a stunning piece of work, both good looking and functional in a low-revs way. It was a slightly oversquare (73mm bore, 71.4mm stroke) 596cc parallel twin, water-cooled, the cylinders inclined forward about 45 degrees. Down in the die-cast aluminium crankcase the flywheel was in the middle, and separate chambers were on each side. The primary drive did not run off one end of the crankshaft, but from the middle, using a sprocket next to the flywheel. The crank spun on roller bearings set inboard from the ends, and maximum sensible revolutions created a herd of about 30 horses in the neighbourhood of 5,000 rpm.

Lubrication was effected via a Pilgrim pump, which probably not 1 percent of the readers could define. This was the old-fashioned way of oiling, and was used in the total-loss four-strokes of yore, allowing the rider to determine the amount of oil going into the engine by a sight glass and an adjustable knob, the remnants being burned with the fuel. A smoky exhaust was the sign of a worried rider dialling in too much oil.

Sparking the plugs were coils and a Lucas distributor with an automatic advance. At the left end of the crankshaft was a Lucas six-volt alternator/dynamo. The Smiths speedo in the headlight shell went to an optimistic 120 mph.

A single-row primary had to cope with all the horsepower, and to keep it lubricated there was a manually adjustable valve down by the countershaft sprocket; this was definitely a machine for the rider who knew what he or she was doing. A multidisc dry clutch fed the power to the three-speed gearbox.

Holder realized that this was an enthusiast's motorcycle, not something to be mass-produced, and volume was low. By 1969 the output was one machine every six months, and soon production ceased entirely.

When Matt's son David Holder moved the remaining stock to the former Triumph Motorcycles 'Number 2' factory at Meriden he found that his father had accumulated a huge collection of original Scott parts, including Miller headlights and Burgess silencers. In 1958 the Birmingham Scott was updated by adding a swinging arm frame and the dynamo was replaced by an alternator. A new 493 cc motorcycle called the Scott Swift was announced but never went into production, although Holder continued to develop and produce one-off Scott motorcycles until 1978.

The 1970s also saw the launch of the George Silk Scott. Effectively one-off bespoke motorcycles, only about 22 were produced in the late 1960s and early 1970s, with the last being made in 1975. This incorporated the old Scott engine accommodated into a modern Spondon frame.



# Buy, Swap n' Sell

If you have anything that you want to buy, swap or sell you can now do so, free of cost, in this section of OVR. All you need do is send a email to the editor of OVR with the text of your advertisment. OVR will NOT be providing any editorial or corrections. Of course OVR cannot accept any responsibility for anything to do with the items advertised – that's a buyer/seller matter.

#### WANTED

A pair of Vincent twin matched crank cases in reasonable condition. Email Richard on <a href="mailto:faulk@iinet.net.au">faulk@iinet.net.au</a>

\_\_\_\_\_

**SELL:** Amal Mk1 Concentric Carburettor Shim Kits, provides for twelve 0.016" incremental needle adjustments to allow precise mixture tuning in the critical mid-range. Also suitable for Wassell carbs. Just A\$15 per kit including postage world-wide. Additional kits just A\$10 each. Email ozvinreview@gmail.com

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#### WANTED/SWAP: RFM number R2567

Hi Martyn, I purchased my 1948 B Rapide in 2006 and it came with non-matching RFM number R3269. With the bike having been in Australia for at least the last 60 years I am hoping to locate the original RFM number R2567, that may well be fitted to a bike or in storage somewhere in Oz. If anyone knows of the whereabouts of RFM 2567, I would consider any reasonable proposition to acquire it; swap of parts, \$\$ or whatever. Thanks, Mark Hamilton, Adelaide. email <a href="markhamilton998@bigpond.com">markhamilton998@bigpond.com</a>

#### SELL: GREY FLASH 5 SPEED ALBION GEARBOX CLOSE RATIO CLUSTER

Albion 5 speed close ratio racing cluster from early to mid 50s racing. At the time these were the only 5 speed gear clusters available and were frequently fitted to Vincent Grey Flashes (fits straight into Albion gearbox cases). It originally came out of the REG 250cc DOHC twin racer that John Surtees won so many races on as well as setting several lap records in the mid 50s.

There is some water damage to the layshaft and layshaft 2nd & 3rd gears. Included are the unique 5 speed gear operator "stirrup" and inner ratchet (both now unobtainium) plus other gear change parts.

Pinion teeth numbers are as follows (paired numbers always add up to 48):

Main 5th - 28, 4th & 3rd (paired) – 26 & 24, 2nd – 22, 1st – 21

Lay 5th - 20, 4th - 22, 3rd - 24, 2nd - 26, 1st - 27

Item is located in Australia. Packed weight is 4.5kg. If anyone is interested I can send detailed photos. Offers around \$AUD750, shipping additional.



# Service Providers

The Service Providers listed have been used with a degree of satisfaction by OVR readers in the past. Just because they are listed does not imply an endorsment of them by OVR.

## Spares:

**V3 Products,** Australia: (aka Neal Videan) has an extensive range of top quality Vincent Spares including multiplate clutches for twins, oil leak eliminator kits, socket head tappet adjusters, paper element oil filters and lots lots more. Ships worldwide. Email for a price list to <a href="mailto:nvidean@outlook.com">nvidean@outlook.com</a>

**VOC Spares Company Ltd,** UK: Full range of Vincent Spares. Ships Worldwide. Visit their web site for more information <a href="http://www.vincentspares.co.uk">http://www.vincentspares.co.uk</a>.

**Maughan &Sons, UK** Takeing pride in producing the highest quality spares, Maughan & sons stock over 1300 parts and produce over 800 for the Vincent Twin and Comet. Ships worldwide. More info here <a href="http://www.maughanandsons.co.uk">http://www.maughanandsons.co.uk</a>

**Coventry Spares Ltd,** USA: Fantastic service and deep product knowledge plus extensive range of excelent Vincent Spares and tools. Ships Worldwide. See website for more information <a href="http://www.thevincentparts.com">http://www.thevincentparts.com</a>

**Conway Motors Ltd,** UK: Anti-Sumping Valves, Multi-Plate clutch conversions for Comets plus an extensive range of excelent Vincent Spares. Ships Worldwide. Email for more information <a href="mailto:steve@conway-motors.co.uk">steve@conway-motors.co.uk</a>

**Tri-Spark Ignition,** based in Adelaide, Australia. Modern electronic ignition systems with models for all classic (and modern) bikes and the current system of choice by Godet Motorcycles (France) for installation in their superb Godet-Vincent machines. For info go to <a href="https://www.trispark.com.au">www.trispark.com.au</a>

**Paul Goff,** UK: A massive range of electrical spares and replacements including 6 and 12V quartz Halogen bulbs, LED lamps, solid state voltage regulators and lots lots more. Ships Worldwide. PayPal accepted. See Paul's website for more information <a href="https://www.norbsa02.freeuk.com">www.norbsa02.freeuk.com</a>

**Fastline Spokes**, based in Broadford, Victoria, can supply Australian made spokes for just about any bike. Owner Bruce Lotherington manufactures spokes to order with a turn around time of less than 1 week. For more info see <a href="https://www.fastlinespokes.com.au">www.fastlinespokes.com.au</a> or phone (+61) 0411 844 169

**Union Jack Motorcycles,** Australia: Full range of Triumph, Lucas, Amal and Venhill control cables. Ships worldwide. More info at the website <a href="https://www.unionjack.com.au">www.unionjack.com.au</a> or phone +61 3 9499 6428

**François Grosset**, France: Electric starter for Vincent Twin. Electronic ignitions for Vincent Single and Twin supplied complete with drive gear. Email <a href="mailto:pontricoul@gmail.com">pontricoul@gmail.com</a> for more info.

**Cometic Gaskets:** Modern, reusable gasket sets for Vincent twins and singles. If you actually USE your Vincent you are mad not to use these. Contact Paul Holdsworth of the VOC Chicago section c/opl holdsworth@yahoo.com Located in Chicago IL USA.

## Nuts n Bolts:

**Classic Fastners,** Australia: Their aim is to supply obsolete and hard to obtain fasteners for your restoration project be it a professional or private venture. The print catalogue, available for download, lists the current complete range. Ships Worldwide. <a href="http://www.classicfasteners.com.au/">http://www.classicfasteners.com.au/</a>

**Precision Shims Australia:** All types of shims made to your requirements, ships worldwide. More info at their web site <a href="https://www.precisionshims.com.au">www.precisionshims.com.au</a>

**V3 Products** (see entry under Spares above) also stocks a large range of Vincent specific nuts n bolts.

**Keables, Australia:** The original nut n bolt specialists who are able to supply just about anything with threads and bits to match such as taps n dies. Recently have relocated to 11 Braid St, West Footscray, Vic. Ph 03 9321 6400. Web site <a href="https://www.keables.com.au">www.keables.com.au</a>

**Small Parts & Bearings, Australia:** Has an extensive range of small parts and bearings and also spring steel shims an an amazing range of sizes. More info at <a href="https://www.smallparts.com.au">www.smallparts.com.au</a>

#### Restoration Services:

**Steve Barnett,** Australia. Master coachbuilder and fuel tank creater who does incrediable workmanship; located in Harcourt, Victoria. Ph +61 3 5474 2864, email <a href="mailto:steviemoto@hotmail.com">steviemoto@hotmail.com</a>

**Ken Phelps**, Australia – Qualified aircraft engineer and builder and daily rider of Norvins for over 30 years, who has the skill and experience to carry out overhauls, rebuilds, general repairs and maintenance to Vincent HRD motorcycles. Full machine shop facilities enabling complete engine and chassis rebuilds, Painting, wiring, polishing, aluminium welding and wheel building. Ken Phelps Phone: (61+) 0351760809 E-mail: <a href="mailto:ogrilp400@hotmail.com">ogrilp400@hotmail.com</a>. Located in Traralgon, Victoria, Australia

**Outer Cycles**, Australia: Jim Browhly is a master craftsman who manufactures bespoke motorcycle exhaust systems for classic bikes, no job is beyond his capability, so if you do need a new system that will be made to your precise requirements, give Jim a call, telephone 03 9761 9217.

**Grant White – Motor Trimmer**, Australia: Specialising in Vintage and Classic Cars and Motorcycles. Located in Viewbank, Victoria. ph 03 9458 3479 or email <a href="mailto:grantwhite11@bigpond.com">grantwhite11@bigpond.com</a>

**John Parker, AMAL Carbs,** Melbourne, Australia: A specialist in AMAL carbs of all models, repairs, restorations and a massive supply of spare parts. For information phone him on +61 3 9879 3817 or email to <a href="mailto:ukcarbs@hotmail.com">ukcarbs@hotmail.com</a>

## General Services :

**Peter Scott Motorcycles,** Australia: Top quality magneto and dynamo services, from simple repairs to complete restorations plus a comphrensive range of associated spares. Provides hi-output coil rewinds with a 5 year warranty. For more info contact Peter on (02) 9624 1262 or email <a href="mailto:qualmag@optusnet.com.au">qualmag@optusnet.com.au</a>

**LUCAS STUFF** – The man who bought Kevin Baker's Lucas Parts business is Danny Lee in Melbourne. Email: dannyleepersonal@gmail.com His phone number is 0412 327 197 Apparently Kevin has moved to Melbourne and works with Danny one day a week.

**Ringwood Speedometer Service**, Australia: Experts in the repair and restoration of all motorcycle, automotive and marine instruments. Smiths cronometric specialists. Telephone (03) 9874 2260

**Dyson M/C Engineering**, Australia: Wheel building, Crank rebuilds, Bead blasting, Rebores & Engine Rebuilds and more. Located at 12 Chris Crt., Hillside, Victoria. Phone 0400 817 017

**Piu Welding**, Australia: Frank Piu is a master welding engineer, located in Melbourne, who works with Aluminium as well as steel. No job to small. Has been recommended by multiple OVR readers. Phone 03 9878 2337

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