No 6 September 2020

Bush Chatter

A newletter for the Sunraysia Historic Motorcycle Club Inc,

Hi all, and as they say we will get to have a meeting and go for a ride sometime soon!

This newsletter was held until the much awaited news was released Wednesday night. My understanding what it means for us as a club is that we can go for a ride with up to 10 people within Victoria as long as the social distancing and masks are exercised. No crossing into NSW yet.

We will have to wait longer until we can resume meetings, hopefully before Christmas and conduct our AGM and elections.

Good news since last newsletter is that our sick list has reduced. Gordon Gunther at last contact was still in Adelaide receiving treatment, and I believe will be home sometime in October. Jim Holland from Robinvale has had a tune up in Melbourne and now home recovering well. Our best wishes to both.

Should members require Club Permit renewals signed please call myself, Chris Sibley or Graeme Brown and arrange a time. Catch you on your bike soon hopefully

Cheers

Jack

All about heads – what you have always wanted to know but were too afraid to ask!!

A four-valve head promotes combustion chamber swirl, and makes it easier to locate the sparkplug in the dead center of the combustion chamber.

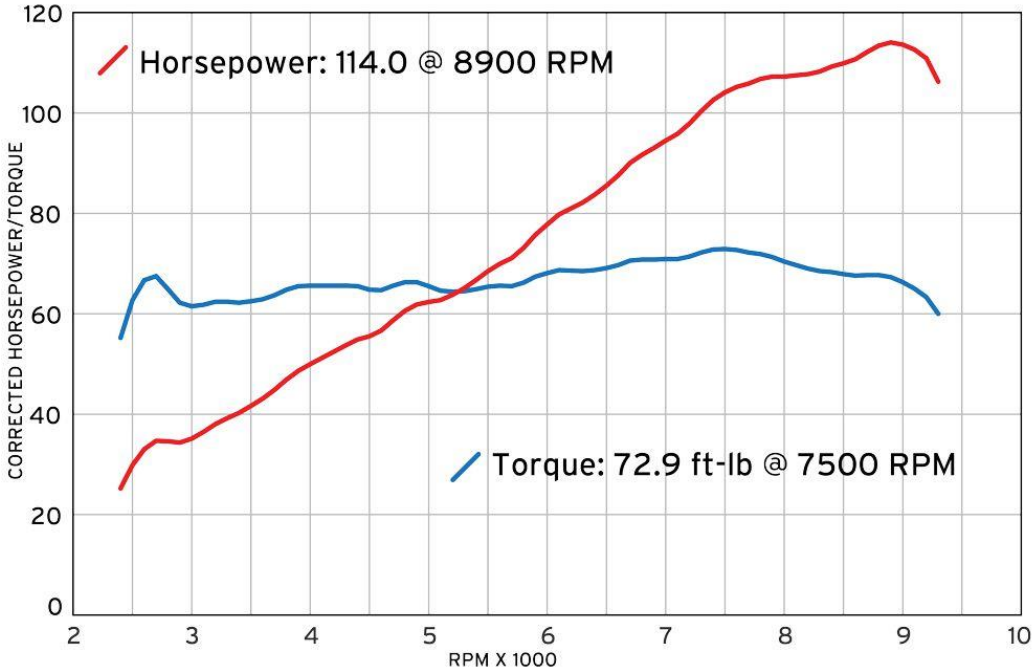
Many years ago, I began jotting down factoids and short snippets of information I'd heard on the subject of motorcycle power, and thought were worth remembering. Some were snatches of

conversation that I felt deserved further comment, some were just pithy remarks made by guys I respected. Since these tidbits make for interesting reading and will hopefully lead you to engage in further research, I thought I'd pass a few of them on. If nothing else, they'll be great conversation starters at your next cocktail party.

Horsepower is made in the cylinder head and lost elsewhere.

An internal combustion engine is nothing more than an air pump. The more air you can flow, heat up, expand and evacuate in a given time at a given rpm, the more power you'll make. Getting the air in and out of the engine is the trick, and that's why tuners expend so much time and effort getting their engines to "breathe."

It's also why aftermarket induction and exhaust systems are so popular. Most stock air boxes and exhaust systems are somewhat restrictive, as they have to comply with federal noise and emission regulations, and that can hurt power. The aftermarket is under no such constraint, at least not if their products are sold "for off-road use only". The premise is that a less restrictive inlet and exhaust enhances airflow through the engine, which improves performance. In theory that premise is correct, but unfortunately, the aftermarket doesn't always get it right. Airflow is a tricky thing, so some aftermarket pipes actually hurt performance or only improve it over a very narrow range. That being said, a well designed aftermarket exhaust, when used with the proper air intake and carburetor or EFI that's been properly adjusted, can provide a lot of bang for the buck, and is one way to boost power quickly and cheaply.

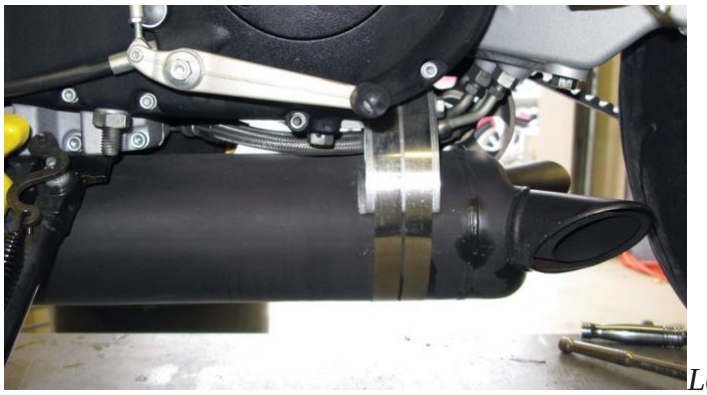


Dyno chartCruiser

So where is the horsepower lost? Anything in the engine that creates friction or drag robs horsepower, and that includes things we need to keep the engine running, like the water pump, oil pump, and alternator. Even the oil in the sump can create a viscous drag on the crankshaft that steals power. Good engine builders work hard to eliminate these parasitic losses. They polish and fit and shim to eliminate friction between rotating parts, at times going so far as to compromise engine life, as BMW did on their production racers back in the '70s, when they deleted the oil filter to gain 1/3 of a horsepower.

The rotating parts of the engine aren't the only problem. External power losses occur through the driveline, from the clutch to the rear wheel, so paying careful attention to things like primary drive alignment and frictional losses in the transmission can set free a bunch of horsepower that might otherwise be lost. For example, a dirty, dry drive chain can require up to 20 percent more horsepower to turn the wheel than a clean, well-lubed one.

The bottom line here is that getting an engine to breathe and burn the charge more efficiently is the only way to create horsepower; reducing frictional losses throughout the engine and driveline doesn't create horsepower, it just lets you use what you have to better advantage.



Looks can be deceiving. This Buell race kit muffler looks like hell, but it makes horsepower.

Horsepower=torque x rpm ÷ 5252

The above is an indisputable fact that describes the relationship between torque and horsepower, a subject we'll be addressing in a few paragraphs.

To determine an engine's horsepower you first need to know how much torque it produces. Once you know that, you can plug in the numbers using the equation: Horsepower = torque x rpm/5252, and determine your engine's peak horsepower. Why the sum is divided by 5252 isn't important here (though the short answer is that it's a mathematical constant). What is important is that as a description of the relationship between torque and horsepower, the formula has no exceptions, and that gives rise to several important points.

If you look at any dyno chart, you'll see that torque and horsepower always cross at 5252 rpm. They're equal at that point and, again, that's a constant. Furthermore, below 5,252 rpm, torque is always greater than horsepower, while above 5,252 rpm, horsepower is always greater than torque. Lastly, you'll notice that in most cases horsepower will climb slightly, even after the torque drops off; this is because horsepower is calculated on rpm, so even though the torque falls, the extra rpm allows horsepower to keep climbing.

The best of both worlds; The V-4 OHC V-max engine makes big torque and spins fast enough to make some real horsepower. What's not to like?
I'd rather have torque than horsepower.

This is a popular topic whenever cruiser guys get together, especially when they're discussing the merits of something like a large V-twin compared to a high-revving multi, but the fact of the matter is that by themselves, neither one does us much practical good. Like most things in life, there has to be a balance, so the first thing you have to wrap your head around is that when it comes to moving motorcycles down the road, torque without horsepower is as useless as teats on a fish.

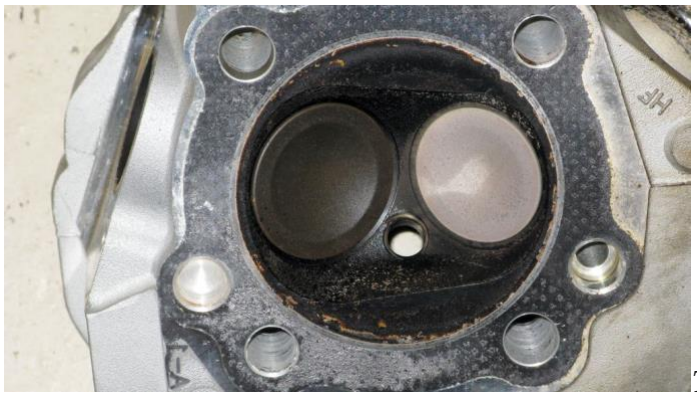
Semantics are a large part of the problem. Formally, torque refers to a twisting or turning force and is measured in pounds-feet (lb-ft) or Newton meters (N·m). This is an important consideration for engineers to distinguish torque from work—work being defined as force measured over distance, which is measured in foot-pounds, (ft-lbs). what this means is that we can apply incredible amounts of torque to something—for instance a large, tight bolt—without moving it, so torque by itself is a useless commodity when we're trying to move something like a motorcycle. When motorcycle riders talk about torque, it's in a different context. typically, we're using the word to describe how hard an engine pulls at a given point on the rpm scale, or in a larger sense, how easy the bike is to ride. In our parlance, bikes with lots of torque are easy to ride, while bikes without a lot of torque, even if they have high horsepower, are just the opposite.

Here's the catch; horsepower is directly related to torque, and in a nutshell describes how much torque is developed over a given rpm. The relationship here can be confusing, but the easy way to think of horsepower as it relates to engine performance is as a measure of how long the engine continues to make torque, in terms of rpm. So all things being equal (between engines with similar torque curves), more horsepower is better, if only because it allows the engine to generate more torque for a longer period of time.

Let's consider two hypothetical engines that have identical torque peaks of 50 foot-pounds. The first, an industrial engine, is capable of turning 2,000 rpm. The second, a motorcycle engine, can rev to 8,000 rpm. I'll let you do the math, but the first engine has a horsepower rating of 19.04, while the second churns out a respectable 76.16. Intuitively, you can guess which bike would be more fun to ride.

Although the industrial engine would be fine turning a water pump or a generator, it just doesn't make enough power over a wide-enough rpm band to be of much use in a motorcycle. Sure, it'd pull like a train off the bottom, but you'd need a 15-speed gearbox just to keep up with traffic.

The fact is that when we say we prefer torque to horsepower, what we really mean is that we prefer engines that make a lot of torque at the bottom of the power curve, and maintain a high level of torque right up to redline. Engines like those, which are typically found in cruisers, standards and touring bikes, are tractable, easy to ride, and relaxing, and that's why we like them. Because the architecture used in such engines generally means they don't rev very high, horsepower numbers are generally moderate, especially when compared to something like a 600cc, four-cylinder sport bike that can turn 14,000 rpm.



Two-valve heads work well enough. This Buell head is particularly good, but the valve position and size requires an offset sparkplug and the head's design doesn't promote swirl as easily as the four-valve design.
Pushrod engines are done: These days you need overhead cams to generate serious horsepower.

If you think pushrod engines can't make power, I'd suggest you attend the next NASCAR, world of outlaw sprint car or NHRA race that's within reach. Pushrod motors can and do make big horsepower despite what their detractors say, and as far as motorcycles go, I'm hard-pressed to recall the last time an OHC-powered motorcycle won a Grand National dirt track championship (I'd guess 1987). Since then, it's been a nonstop parade of pushrod engine-powered H-D XR750s. I'm not saying the pushrod engine is the best thing since sliced bread; it has issues just as overhead cam engines have theirs, but overall the design is still as viable as it ever was and should continue to be for the foreseeable future.

A four-valve engine isn't necessarily superior to a two-valve engine.

I don't recall when I wrote this one down but I suspect it was back in the day when four-valve engines were all the rage, and I was something of a Luddite regarding their advantages. These days I've come to believe that while a two-valve head isn't necessarily a bad thing, especially when the engine is a relatively slow-turning one, in nearly every instance, because they promote better atomization of the fuel/air mix, the four-valve head works better. It produces more power, reduces emissions and improves economy, which I think we'd all agree are good things. that being said, I own two bikes that have two-valve heads on them, and both run really well (the newest one was built in 1970 though).

You'll get the most bang for your performance buck by increasing air flow. Unfortunately some pipes are more for show than go. ***Small, unpolished ports often flow better than big shiny ones, especially for street use.***

When I was a kid, it was all about porting and polishing. Everyone made the ports as big and shiny as they could and then wondered why their bikes weren't as fast as the ones from California with tiny, rough ports. Here's the skinny: while it's true that big ports can flow more air, it's only of benefit if the engine can turn enough rpm and create enough velocity through the ports to make use of them. At lower engine speeds, an overly large port can actually hurt performance because it allows the incoming air to stall, which hampers cylinder filling and kills low and midrange torque.

Conversely, a small port increases gas velocity in much the same way that restricting the size of a water hose causes the water to jet out with greater force. this helps fill the cylinder, especially at lower rpm, and increases torque. As to surfaces, a rough finish—particularly in the intake port—promotes better fuel atomization, and though it may seem counterintuitive, reduces drag through the port and increases flow, much the way the dimples of a golf ball do. As far as the exhaust port goes, a slight polish to prevent buildup in the port works fine, but there's no need to buff the thing to a mirror finish.

So there you have it; the next time you find conversation lagging, you can trot out one of these moto-snippets and become the life of the party. Hell, it's always worked for me, and in case you're wondering, yes I'm still collecting them.

***An interesting youtube site** – Allen Millyard - building an unusual motorcycle engine.*

https://www.youtube.com/user/millyardviper/videos

Amal carburettors - a snap shot.

AMAL was a British engineering company servicing the motorcycle and other light-engineering motor industries between 1927 and 1993[1] based in Birmingham, England.[2]

AMAL is a British carburettor trademark. Amal was the supplier of carburettors to many marques within the British motorcycle industry[3] including the largest of British manufacturers, such as BSA and AMC, and to producers of small industrial engines.

The main carburettor types commonly associated with Amal are slide carburettors for motorcycles. These were historically distinguishable as two types: the Monobloc with integral,

offset float chamber and Concentric, a later development with repositioned float chamber directly under the body and air-slide.

Less-common types, known as GP and TT, were mainly for road-racing and other competition use, and were used on high-performance road machines such as BSA Gold Star, BSA Spitfire and Velocette Thruxton.

Amal also produced handlebars and control levers for the motorcycle industry,[2] via a subsidiary business, Lozells Engineering,[4] twist grips,[5] cables and wire, plus ICI silicone grease.[3][6] All AMAL chromium plated components were stated to be finished in "Nickel Chromium Plating, British Standard Approved."[3]

Amal's light-alloy levers with click-stop adjusters 509/001 brake and 509/002 clutch were taken-over by BSA and marketed under their 'Motoplas' accessories branding from 1967, with Doherty taking-over production of the traditional chromed-steel levers.[7]

With the decline of the British motorcycle industry, the use of Amal carburettors declined, but they are still produced under different ownership as spares for the classic market.

Carburettor products

*Besides carburettors for light-applications such as types 308 and 355 for Pedal Cycle Motors,[8] Amal historically had three popular carburettor designs: 'Standard' fitted up to 1955, 'Monobloc' fitted from 1955 and 'Concentric' fitted from 1967.**[9]***

The most historic - 76 & 276 Series (Amal 'Standard' series) can be spigot or flange fixing with adjustment screws on the left or right hand sides of the carburetter body. The available bore sizes are 15/16", 1" and 1 1/16" diameters. The 276 type carburettor is, in virtually all aspects, identical to the 76 version, except that the main emulsion air is drawn from inside the air intake (air filter) whilst the 76 carburettor uses unfiltered air. The 76 types are of die-cast zinc construction and were introduced in the early 1930s, replacing the earlier 6 series, which were of bronze construction, although basically the same design. The 276 type was introduced in 1940 in an attempt to improve the carburettor's durability in dusty and dirty operating environments.

In the same design range were the 4 and 5 types with smaller bore sizes and the 29 type with larger bore sizes. These were replaced with the 74, 75 and 89 and then, later, by the 274, 275 and 289 types.

The 'Monobloc' type was available from 1955 with designations 375, 376 and 389[9]

Amal Concentric carburettor, one of two fitted to a Triumph Bonneville, with the second just visible to the rear

The more modern Concentric*, developed and introduced for the 1967 Model Year, was initially designated 600 and 900.[2] The 600 series had bore sizes of 22mm, 24mm and 26mm, being known as 622, 624, and 626 respectively. Similarly, the 900 series with bore sizes of 28mm, 30mm and 32mm, were known as 928, 930, and 932 respectively.[10]*

The largest bore at 32mm was slightly larger than any previous Monobloc, and all were flange-fitting with stud-holes at two-inch centres.[10]

The Concentric design with non-protruding float chamber was both slimmer and shorter, enabling easier mounting to two-port cylinder heads. Left or right sided carburettors could be produced from basically the same die-casting, and the design was compatible with up to 40 degrees of downdraught.[10]

Eventually three variants were produced: Mk1, Mk1.5 and Mk2.

Company history

The AMAL company was formed in the late 1920s when three manufacturers amalgamated – Amac, Brown and Barlow, and Binks – to manufacture carburettors and associated products under the name Amalgamated Carburetters Ltd.[1]

The name changed to Amal Ltd in 1931.[1] Amal subsequently became partly owned by IMI Group, and the product range was expanded to include handlebars and controls with full IMI ownership by the middle 1960s.[1] It was sold after June 1973[11] to Grosvenor Works Ltd of North London - a supplier of fuel system components. Under Grosvenor some of the most popular obsolete ranges were remanufactured.[1]

In 2003, the business was sold to Burlen Fuel Systems Limited, a company that also produces SU, Solex and Zenith, three other classic carburettor ranges.

Amal carburettors were used on Cooper Formula 3 racing cars and racing motor cycles. Coopers fitted with the J.A.P. 1,100 cc engine with such a carburettor were popular in hill climbs and sprints competitions, and were used by the frequent champion in the 1960s, David Boshier Jones.

A couple of interesting websites relating to the amal carburettor

http://amalcarb.co.uk/rebuilding-mark-1-concentric-carburetter

https://www.classicbritishspares.com/blogs/news/36725441-inside-the-genuine-amal-mki-premier-concentric-carburetor

Who's who in the club.

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Vice President: Ian kinleysideIkinleys@bigpond.net.au

Secretary: Chris Sibley, christophersibley@iinet.net.au

Treasurer: Graeme Browngrbrown1@internode.on.net

General committee: Ron Brown, Robert Ferguson, Jeff McCarthy, Adam Zinich.

Vehicle inspectors Ron Brown brownrg@bigpond.net.au

Alan Tarr tarrs@ncable.com.au

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Crossword Solution from last edition

Across

3/	Sidecar	6/	Stoppie	8/	Ape hangers
11/	Highside	14/	Tankslapper	15/	Crotchrocket
18/	Four stroke	19/	Phil Crump	20/	Barnfind
21/	Rice burner				

Down

5/	Vintage	2/	Headlight	1/	Boxer twin
4/	Chook chaser	7/	Rat bike	9/	Rooster tail
10/	Shaftdrive	16/	Tyres	17/	Hard tail
13/	Café Racer				

This is a good deal...

Graham Burton-Clay at Sunraysia Bearings, 34 Orange Avenue, Mildura, telephone 5023 4337, is offering all SHMC members trade prices on a wide range of items including those featured below... All you have to do is flash your membership card to get one of the best deals going around. The Sunraysia Bearings team have 50 years experience in the industry, and the business is locally owned and operated by people that live and work in our community. Thanks Graham! Let's support the bloke who supports us. The good stuff!

Wanted To Sell

1984 Suzuki *GSX250S. Reg 4386H. $1,000. Roger Moser 0428 413 323*

2000 Ducati Monster *Dark 600cc, 56,000 kms, excellent condition, RWC, new tyres $4,000 Contact Roger Moser 0428413323*

1950 BSA *A7 500 twin $10,500ono Phone John Stevens 0427 246 524.*

Wanted to Buy

Fred Cavallaro (*cavallarofredcav@gmail.com*) is looking for parts for a Fuji Rabbitt scooter. Any information appreciated. Please email Fred if you have any parts or know of any sources

Fuji Rabbit scooters a snapshot

*The **Fuji Rabbit scooters** were the first Japanese made **scooters** capable of reaching speeds in excess of 60 miles per hour (97 km/h). ... Motor **scooters** were so important to the post-war vehicle industry that In May 1948 both a Silver Pigeon and a **Rabbit** were presented to the Emperor of Japan.*

Manufacturer: *Fuji-Sangyo; now Subaru Corporation..*

Production: *1946—1968*

Assembly: *Otakita Plant, Ōta, Gunma, Japan*

Fuel consumption: *35 km/L (99 mpg-imp; 82 m.*

Services

• *Can do small panel beating jobs on motorcycle metal body parts. Phone* ***Geoff Needham 0437 006 882***

Regular events Regular Club Runs

Monthly meeting rides *leave from Hudaks on* ***Rides cancelled until further notice!!!*** *ishes at the Mildura Scout F*

The mid-month *Centro at 10am on the second Sunday of the month. Turn up with a full tank. Many more events listed on our website*

Bush Chatter is always on the lookout for news and information around the club. If you have a tall tale, or a true tale, or some interesting stories/anecdotes/ photographs/ jokes etc. You know the drill!! Send them to me at hammondmp@outlook.com or call me on 0419 352 291. Thanks in advance and cheers!!

Report from the 'Club Band'

For obvious reasons the band has been in abeyance over the last few months or so. However with the recent changes to visiting rights, the plan is to resume practice as soon as possible. Please note our first public performance is getting closer (a well held secret date!!)

If you have a yen to play a musical instrument in a very relaxed and enjoyable environment – why not give it a crack? Even if you haven't played for years, it is a chance to catch up on some old skills. We are always keen for new members to share the fun.

Phone Peter Hammond on 0419 352 291 for information,

"God didn't create metal so that man could make paper clips!"

— Harley-Davidson Ad