September 2014

NORTHSTAR CHEVELLE CLUB

MINNESOTA'S '64 - '87 CHEVELLE and EL CAMINO CLUB™

I love going to swap meets. I think that most car guys do. That percentage falls when I say that I also like going to antique stores, especially since it's for many of the same reasons. I bet I'm in a very small group that would admit that they also like going to thrift stores, flea markets, and garage sales. Before I am asked to turn in my "man card", car guy credential, or be otherwise shamed, let me explain it further…

Swap meets are places where people go to sell of unwanted parts, tools, maybe even some memorabilia or garage art. In the larger swap meets you can find just about anything. I love going to the swaps partly because I'm cheap, but partly for the nostalgia. I like seeing the old parts, old signs, even tools, etc. Those vintage items radiate character and style that just doesn't exist anymore. It's a trip back in time and maybe an opportunity to get that period correct part for the car or something cool for the garage or even inside home. Keep your ears open at a swap meet, and you will certainly hear stories from days past and maybe even get a tip on where to look next. It's also a great way to keep tabs on the value (read: prices) of original parts that aren't jacked up by some auction. Great deals can be had if you're patient and in the right place at the right time.

I know, you're thinking to yourself: that makes sense. Swap meet=car parts. But "antique or thrift stores, garage sales, and flea markets???" Absolutely. As I was trying to get enough money to buy a muscle car, I got into buying and selling collectables. Though I focused primarily on Hot Wheels, NASCAR, and larger scale die-cast, I found that I could score some really good deals on older automotive collectables at certain antique stores. Those particular stores had spaces that were leased by people who would resell childhood toys like cars and trucks. Sometimes I would come across pieces that had been priced years ago but never kept up to date with the current market, and those were the money makers. While in those stores, I would find all kinds of neat things. I found one shop that had vintage automotive ads for $3 each and they were even separated by manufacturer and year. I regret passing on a set of AC Delco sparkplug cuff links that I think would have make a good profit to the right person, and there was plenty more oddities like that I would discover over my many trips.

Since then, I have found over and over that thrift stores and garage sales are good local and usually cheaper outlets for buying and reselling those treasures that people discard. A few years ago I was at a Savers and bought a set of 4 pretty cool copper mugs for $0.99 each. They had a logo on the side which didn't mean anything to me at the time, but after some simple research it turns out they were for the Moscow Mule drink. Over the course of several weeks I came across several sets of these including a pitcher and resold them all for good money. Last month I wrote about making my shifter handles, which I made with a scrap piece of aluminum block and a used drill press purchased at a reseller store. Retail price was

about $800, but I bought it for $400 after tax and it was virtually unused. My latest find was a nice solid benchtop tool base that I found at Savers for $10 (retails for $70). I'm sure the original intent was for it to be a drill press, bench grinder, or band saw table, but for now I mounted my sheet metal shear on it which frees up a small portable workbench/table for other use.

Truth be told, a large portion of my garage (tools and furnishings) have come to me second-handed. Most of the smaller and hand-held tools were gifts and hand-me-downs as I grew up, but the bigger stuff is almost all used. Two of my three storage cabinets came from my home's previous owner, but they were used as a pantry and coat closet. The third one I salvaged from my work. My Matco welder came from Chris P, and he alerted me to a nearly new blasting cabinet this spring too. My air compressor has had at least 5 owners over the years, and is on it's second pump and motor I got from Steve M, but probably my favorite score is my toolbox. It's nothing too special, just a black 40" Craftsman Professional lower chest, but it only cost me a pair of cast aluminum Pro-Stock valve covers I already had, and $40 cash. My TV, the 1950's Fridge, nut/bolt cabinets, chrome wire racks, the recliner and "coffee table", etc have all had several owners over their lives, and nearly everything in my shop has some story I could tell about them.

Not necessarily taking this one step further, but more of a parallel course, you will find that the majority of the parts used on my Chevelle have come from other vehicles. Partly by design, partly from necessity, but I prefer original to reproduction. I tried to make smart decisions when it came time to replace things, and quite often Chris P would have bird-dogged the next thing before I knew I needed it anyway. Sometimes I didn't necessarily *need* it, but it would get me thinking about the direction I was going.

From Derek's used carpet and rear coil springs to an interior swap with Mitch, to Stan's rear axle and Oscar's wheels, there is little on my car that hasn't originated from another car. I joke that all that's still original is the steering column, bumpers, back glass, frame, and red sheet metal and that's not too far off. I don't plan on it ever really being a trophy winning show car anyway, and a restoration is out of the question since I'd rather do anything else other than detail it.

I've always been a fan of vintage and retro, though that's changing as I get older and my car progresses. My garage has also changed over the years, going from exposed studs and dirty junkyard style to finished walls and "garage art". Maybe I'm getting to "that age" where the refinements are more visually appealing, or maybe I'm just past the point of keeping all that junk, but one thing will stay constant: I'll still be on the lookout for that next "brand used" thing.

What is Horsepower (Really) and How is it Quantified?

By Jeff Smith

We all tend to take references for granted, so let's crawl down the rabbit hole, shall we? We promise we won't go so deep that we can't find our way out! The usage of the term horsepower started with a guy by the name James Watt and yes, the electrical term watt is named after him. Way back in 1775, Watt was a Scottish engineer who figured out a way to radically improve the performance of the steam engines of the day. As he went in search of customers, he realized he needed a way to equate his engine's power to something that people could easily relate. Large draft horses were the power source of choice for most farming and industrial applications, so Watt took it upon himself to equate his steam engine's power to a draft horse. Our good Mr. Watt determined that a draft horse could turn a 12-foot radius mill wheel at the rate of 2.4 times per minute. Doing a few calculations (we'll spare you the boredom of review), Watt came up with a rounded-off figure that the draft horse could produce 33,000 lb.-ft. of torque per minute.

Once we convert this to pound-feet of torque per rpm, this equates to 5,252. So the classic definition of horsepower became: Horsepower = Torque * RPM / 5,252

As an example, if our 540 cubic inch big-block Chevy engine makes an impressive 675 lb.-ft. of torque at 5,000 rpm and we plug that into our formula we get:

HP = 675 * 5,000 / 5,252

HP = 3,375,000 / 5,252

HP = 642.6

So our Rat makes 642 horsepower at 5,000 rpm. But let's look a little deeper. All engines produce a twisting motion that we call torque. But this twisting motion does not take into account the time it takes to produce that effort. Horsepower is, by definition, a measurement of the amount of force (torque) over a period of time, which in our equation is rpm. As defined by the equation given to us by Mr. Watt, it appears that even when we make less torque, if we do so over a shorter period of time (higher rpm), then we can make more horsepower. This is all true.

You should also be able to see by the equation horsepower and torque will be always exactly the same at 5,252 rpm. So if our engine made 650 lb.-ft .of torque at 5,252 rpm, then it will also make 650 horsepower. That's why the torque and horsepower curves always cross on a graph at 5,252 rpm.

All internal combustion engines have one particular point where they are the most efficient and that also happens to be peak torque. This is the point when the induction and exhaust systems are operating at their peak efficiency. This is almost always where the engine experiences peak volumetric efficiency (VE). This means that the engine is able to contain the most amount of air to produce a maximum torque number. Sometimes, highly refined race engines can actually broaden this peak torque value over a span of several hundred rpm. Below this rpm, the combination of low intake port velocity and cam timing are such that the engine cannot fill the cylinders with enough

air to make the same torque. Conversely, at engine speeds above peak torque, while there is sufficient port velocity and perhaps sufficient valve opening duration, there is increasingly less time because of the higher engine speed to allow the cylinders to achieve proper cylinder filling. This means that the VE begins to fall off, which means the torque also diminishes.

An engine's power is often defined by its power curve, which is defined as the rpm spread between peak torque and peak horsepower. Generally for street V8 engines, the power curve will often be 1,500 to sometimes 2,000 rpm. That means that if our normally aspirated engine made peak torque at 4,500 rpm, we can safely assume that peak horsepower could occur somewhere around 6,000 rpm to perhaps as high as 6,500 rpm. A wider power curve is always advantageous.

You can probably see that beyond peak horsepower, the torque drops off so rapidly that horsepower falls. Continuing with our big block Chevy example, let's say that our 650 lb.-ft. number occurred at 5,000 rpm and that the torque began to fall after this rpm so that it was only making 600 lb.-ft. at 6,500 rpm. That would produce a peak horsepower number of 742. But let's say that now we change cylinder heads and camshaft and now peak torque remains the same but the engine now makes peak torque at 5,750 rpm, which would produce 711 horsepower at peak torque. The dyno test also shows then that we produced a power band that's a little narrower than the previous test and that peak horsepower occurred at 7,000 rpm and that the engine was still making that 600 lb.-ft. of torque. Now our peak horsepower number is 799.69 that we'll round off to an even 800 horsepower.

The point of this exercise is to show you that one way to make more horsepower is to simply spin the engine at a much higher rpm. We are making the same torque but we make more horsepower because we are doing this work in a much shorter period of time, by means of more revolutions per minute. That means that we are creating more cylinder firing pulses per minute, which does more work in a shorter period of time.

This sounds really easy, right?. Except that simple physics gets in the way. When you decide to spin the engine at a higher rpm, g-forces in the piston and crank assembly grow astronomically as do the forces on the valvetrain. This means you must use extremely high quality parts to be able to withstand these g-forces. Plus, cylinder head, camshaft duration, valve sizes, compression, and a host of other changes are necessary to be able to produce power at these very high engine speeds. Generally speaking, small displacement engines with shorter strokes tend to withstand these higher engine speeds much better. Overhead cam engines are also better suited to extreme engine speeds, which is why the new generation Ford Mod engines with their single and dual overhead cams are very good at making power at higher engine speeds because A) four valves breathe better than two valves and B) these engines have a more stable valvetrain when the cam is placed on top of the valves, eliminating troublesome pushrods. But then, despite the apparent limitations of pushrod engines, those NASCAR boys are able to make amazing power with a 358 cubic-inch engine at nearly 10,000 rpm and make them live for 500 and 600 mile races.

Hopefully this little jaunt down horsepower lane has been enlightening. If nothing else, it's bound to give you a better appreciation for the kind of power current engine technology can produce.

It's fascinating.

Quiz: How Well Do You Know the Founding Fathers (of American Automobiles)? By David Fuller

Today, we're examining the guys responsible for creating the iconic car brands we love. We're talking about the true pioneers the American automotive industry. The founding fathers of American automotive performance. How much do you know about them? Answers on the next page.

1. This forefather had many inventions, including the lawn sprinkler and enameled bathtub:
A) Ransom Olds.
B) Billy Durant
C) David Dunbar Buick

2. This Swiss-born racer competed in four Indianapolis 500s and founded one of the most iconic American car brands:
A) Henry Ford
B) Louis Chevrolet,
C) Ransom Olds

3. After founding his namesake car company, this pioneer went on to develop the Reo:
A) David Dunbar Buick
B) Ransom Olds
C) Walter Percy Chrysler

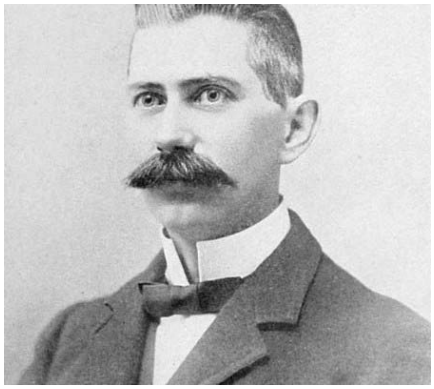
4. This founding father of automobile mass production set the World Speed Record in 1904, going 91 miles-per-hour in his own car:
A) Louis Chevrolet
B) Billy Durant
C) Henry Ford

5. Made transmissions for Olds and engines for Henry Ford before launching own company:
A) Roy Chapin
B) John & Horace Dodge
C) Henry M. Leland

6. This machinist and inventor founded both Cadillac and Lincoln–as well as electric barber clippers:
A) Walter Flanders
B) Henry M. Leland
C) Harley Earl

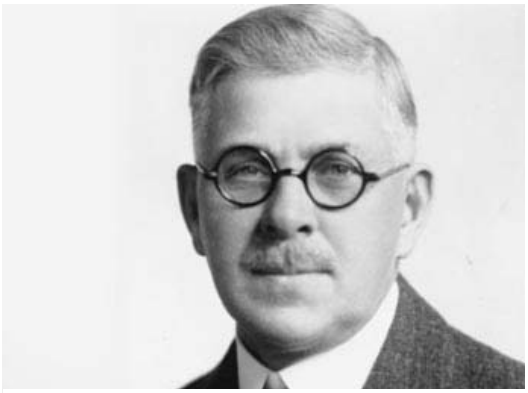
7. The American automotive forefather pioneered the system of multi-brand holding companies, helping to found General Motors:
A) Billy Durant
B) Walter Flanders
C) Harley Earl

8. Before converting Maxwell-Chalmers into his namesake company, this former locomotive engineer served as president of Buick:
A) David Dunbar Buick
B) Louis Chevrolet
C) Walter Percy Chrysler

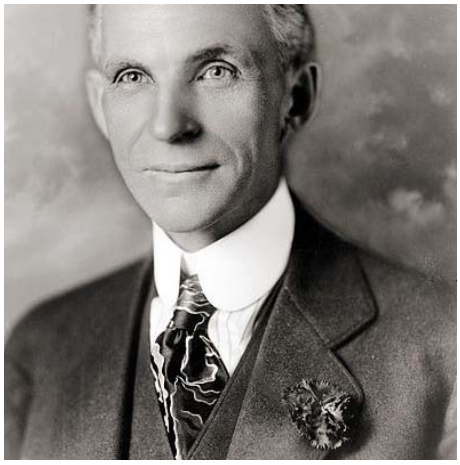


1. David Dunbar Buick had many inventions before founding Buick.

2. Louis Chevrolet would later leave Chevrolet to focus on building race cars and go-fast parts.

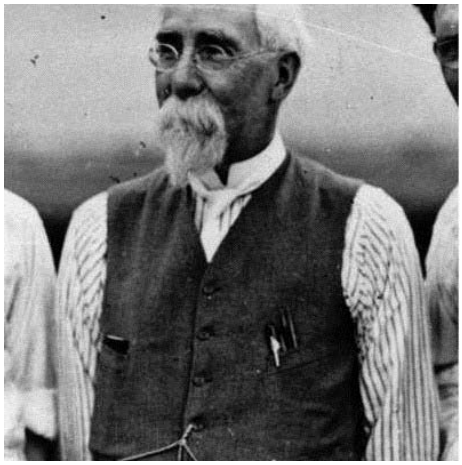


3. Ransom Olds created the Oldsmobile and left his name on an entire brand of cars, but would eventually fade from the car scene.



4. Henry Ford is known for his use of the assembly line and wildly popular Model T.

5. Horace Dodge (pictured here) and his brother John sold their shares in Ford so they could found the Dodge Brothers company.



6. Aside from having a sweet beard, Henry M. Leland gave us two iconic luxury brands: Lincoln and Cadillac.

7. Billy Durant founded General Motors in 1908 after a stint with Buick.

HOW WELL DID YOU DO?

8. Before creating the Chrysler Corporation, Walter Percy Chrysler served as GM's first vice president.

Club gear available at: IDthreadz **www.IDthreadz.com**

NORTHSTAR CHEVELLE CLUB

Upcoming shows: (Not all are listed, see CarShowNationals.com for more!)

9/1 Orphan and Still Made show
Blacksmith Lounge, Hugo
Northstarwheel.com

9/6 All In show, Running Aces Harness Park, Columbus MN 8-5
Intentionallygrounded.com

9/6 St Boni's Fall Festival and Car show, St Boniventure church Bloomington 7am

9/6 Defeat of Jesse James show
Northfield, 9am, **www.DJJD.org**

9/7 Inver Grove Heights days 10am
Enter at 65th and Cahill

9/13 Anoka Cruise Finale 9-4
Anoka High School

9/13 Helping out our American Heroes (HOOAH) Mac&Chesters 10-4

9/20 Route 65 Classics Aniiversary 9am, route65classics.com

9/27 Cruise for Troops
Route 65 Classics Ham Lake
CLUB MEETING

9/28 10th annual Broadway Pizza show, Fridley 11-3

9/28 44th annual Fall Classic swap and show, State Fairgrounds, 8am

10/11 Frankensteiners Ball 9am
Anoka County Fairgrounds

10/12 TC Roadsters show and swap, 6am State Fairgrounds

Recurring shows and cruises:

Anoka cruise
Most Saturdays 5-9pm
Info: **www.anokaclassiccarshow.org**

St Francis City Center Mall
Fridays 5-dusk
Info: Dick Henz 763-753-1092

Ricky's Embers in Fridley
Thursdays 4-8pm - Labor Day
10% off total bill

Hastings cruise
Every other Saturday
Info: www.Hastingsdowntown-mn.com

Stillwater Cruisin' on the Croix Wednesdays 5-9pm
Info: www.discoverstillwater.com/events

North St Paul History Cruise
Fridays 6-10pm Info: **www.historycruzer.com**

MN Cars and Coffee AutoMotorPlex Chanhassen
1st Saturday 8-11am

Meister's Bar & Grill Shoreview
Saturdays 5-10pm

Lookout Bar & Grill Maple Grove 3rd Wednesday 6pm
15% off food, Raffle/door prize

Culvers Anoka
3rd Thursday 5/15, 6/19, 7/17, 8/21, 9/18

RiceKillers Monday Nights,
Champlin Ice Forum, 6:30pm, free