Mechanic's Corner

Contributed by Administrator
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The Mechanic’s Corner
We are excited to announce this new addition to our web site. Our members are invited to submit information on modifications, both mechanical and appearance in nature for publication in this new section. Send a summary of your project to DelRods@comcast.net or bring the information to a club meeting. We will spotlight you, your vehicle and the project you have begun or completed.
Please call Warren Hensley at 302-535-3005 with your questions or send to the email listed above. Remember, no project is too small or too large. Enjoy the ride!

For most car and truck enthusiasts, appearance is just as important as horsepower. Technology has provided many choices when an owner wants to “muscle up” his/her ride.
You may prefer a solid color,big stripes, little stripes, tu-tone paint or flames on your ride and today’s technology gives us a wide range of choices. Under the hood, we most often think of the mechanical side of things. Many owners enjoy “dressing up” their engine bay with chrome components or painting the bay to match the exterior. Many of the modern vehicles are a bit boring when you raise the hood, usually displaying a lot of black or gray colors. So, some owners like to brighten the engine bay with lights, custom paint and decals as shown below. A little color makes a difference.

Before

After

Let us know what you’ve done to your ride. Photos are not required, just call or send us a note.

Cleaning the Inside of a Car Windshield

Cleaning the inside of a car windshield is important to improve visibility. However, because of the angle of the windshield and the position of the dashboard, it can be a challenge to clean it thoroughly. Fortunately, the best way to clean windshield interiors is very inexpensive

Fill a bowl or pot with warm water. Add a teaspoon of liquid dishwashing liquid and a few drops of water vinegar. Mix thoroughly.

Get two microfiber cloths—one to wash, one to dry. Microfiber cloths can be purchased at most supermarkets, auto supply stores and home centers. They are machine washable and reusable.
First, dip one microfiber cloth in the cleaning solution and then wring it out.
Next, wipe the wet cloth over the interior surface of the window to thoroughly wash it. For hard-to-reach corners, use a coat hanger or straight-edge (such as a ruler) to help push the cloth into them.
Finally, wipe the windshield dry with the other cloth.
Newspaper may be used instead of microfiber cloths. While newspapers don't leave streaks on interior windshields, they could leave ink residue on your hands.
Other cleaning solutions include commercial window cleaners, such as Windex, or rubbing alcohol.
Some interior windshields may develop a thin film, caused by emissions from plastic dashboards. These cleaning methods will remove the residue.
Be sure to clean the dashboard and the exterior windshield at the same time for best results.

Dual Master Cylinder

I have heard the arguments many times, claiming a properly maintained and working single reservoir master cylinder is just as safe as a dual reservoir system. My response is always the same, “if a single reservoir system is so good, then why are they no longer offered?” Often when things go wrong with a car mechanically, there is no warning they are about to fail, and most long-time enthusiasts have had their share of new or rebuilt parts fail as well. Brake systems are comprised of numerous parts, all-working together to stop the vehicle. As cars evolved from four-wheel drum systems to disc/drum combinations, the design of the various components making up the system changed in order to keep pace with the new technology. One important change was the shift from single reservoir master cylinders to dual reservoir master cylinders.
Originally developed to handle the different fluid volume requirements for disc/drum brake combinations, it became quickly evident the dual reservoir systems also offered important safety benefits that were equally as applicable to the drum/drum brake cars as well. Single reservoir master cylinders provide pressure to both the front and rear systems, however, should a failure occur somewhere in the system, there is a very good chance that all brakes will be lost in the vehicle. With a dual reservoir system the brake circuits are split into front and rear, and in the event of a failure you have a much better chance of safely stopping the vehicle.
Typically in disc/drum dual reservoir master cylinders, one of the reservoirs is larger than the other. Often the larger reservoir is for the disc brakes although some models of cars exist where this is reversed. Many new cars today, have a single reservoir although the reservoir splits internally when the fluid drops to a lower level, these systems also still use separate front and back brake circuits.
When using a dual reservoir master with disc brakes on the front, the output pressure is equal on each port and must be regulated or adjusted through an external proportioning valve to provide proper balance.
I understand the purists’ point of view, and although I strongly advocate for converting cars to use dual reservoir master cylinders, at the very least any enthusiast running a single reservoir master cylinder, should ensure their emergency brake system is in top working order and test it often.
Courtesy: Mark Simpson of Classic Car Restoration.

Horsepower

Horsepower (hp) is a unit of measurement of power (the rate at which work is done). There are many different standards and types of horsepower. The term was adopted in the late 18th century by Scottish engineer James Watt to compare the output of steam engines with the power of draft horses. It was later expanded to include the output power of other types of piston engines, as well as turbines, electric motors and other machinery.[1][2] The definition of the unit varied between geographical regions. Most countries now use the SI unit watt for measurement of power. With the implementation of the EU Directive 80/181/EEC on January 1, 2010, the use of horsepower in the EU is permitted only as a supplementary unit.[3]
The development of the steam engine provided a reason to compare the output of horses with that of the engines that could replace them. In 1702, Thomas Savery wrote in The Miner's Friend:
So that an engine which will raise as much water as two horses, working together at one time in such a work, can do, and for which there must be constantly kept ten or twelve horses for doing the same. Then I say, such an engine may be made large enough to do the work required in employing eight, ten, fifteen, or twenty horses to be constantly maintained and kept for doing such a work…[7]
The idea was later used by James Watt to help market his improved steam engine. He had previously agreed to take royalties of one third of the savings in coal from the older Newcomen steam engines.[8] This royalty scheme did not work with customers who did not have existing steam engines but used horses instead.
Watt determined that a horse could turn a mill wheel 144 times in an hour (or 2.4 times a minute).[9] The wheel was 12 feet (3.6576 meters) in radius; therefore, the horse travelled 2.4·2π·12 feet in one minute. Watt judged that the horse could pull with a force of 180 pounds. So:

Watt defined and calculated the horsepower as 32,572 ft·lbf/min, which was rounded to an even 33,000 ft·lbf/min.[10] Watt determined that a pony could lift an average 220 lbf (0.98 kN) 100 ft (30 m) per minute over a four-hour working shift.[11] Watt then judged a horse was 50% more powerful than a pony and thus arrived at the 33,000 ft·lbf/min figure.[12][better source needed] Engineering in History recounts that John Smeaton initially estimated that a horse could produce 22,916 foot-pounds per minute.[citation needed] John Desaguliers had previously suggested 44,000 foot-pounds per minute and Tredgold 27,500 foot-pounds per minute. "Watt found by experiment in 1782 that a 'brewery horse' could produce 32,400 foot-pounds per minute." James Watt and Matthew Boulton standardized that figure at 33,000 the next year.[13]
Most observers familiar with horses and their capabilities estimate that Watt was either a bit optimistic or intended to underpromise and overdeliver; few horses can maintain that effort for long.[citation needed] Regardless, comparison with a horse proved to be an enduring marketing tool.
A common legend states that the unit was created when one of Watt's first customers, a brewer, specifically demanded an engine that would match a horse, but tried to cheat by taking the strongest horse he had and driving it to the limit. Watt, while aware of the trick, accepted the challenge and built a machine which was actually even stronger than the figure achieved by the brewer, and it was the output of that machine which became the horsepower.[14]
In 1993, R. D. Stevenson and R. J. Wassersug published an article calculating the upper limit to an animal's power output.[15] The peak power over a few seconds has been measured to be as high as 14.9 hp.[15] However, Stevenson and Wassersug observe that for sustained activity, a work rate of about 1 hp per horse is consistent with agricultural advice from both 19th and 20th century sources.[15]
When considering human-powered equipment, a healthy human can produce about 1.2 hp briefly (see orders of magnitude) and sustain about 0.1 hp indefinitely; trained athletes can manage up to about 2.5 hp briefly[16] and 0.3 hp for a period of several hours. The Jamaican sprinter Usain Bolt produced a maximum of 3.5 hp 0.89 seconds into his 9.58 second 100m dash world record in 2009.[
here exist a number of different standard determining how the power and torque of an automobile engine is measured and corrected. Correction factors are used to adjust power and torque measurements to standard atmospheric conditions, to provide a more accurate comparison between engines as they are affected by the pressure, humidity, and temperature of ambient air.

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A few years ago, I bought a 1983 Ford F100. It was for sale on Craigslist for $350.00. The motor was good, but the trans was bad. It had been sitting in a field for a few years, and was not tagged. I did a brake job, fixed the exhaust with a new muffler & some pipe, installed a new fuel tank & got it inspected & tagged. I also installed a rebuilt transmission. It has some rust issues, but I was able to get it through state inspection. I also installed a new HEI ignition distributor & wires, as well an Edelbrock 4 barrel carb. It's just a beater, but it has a strong 302 & E4OD trans. I only use it for hauling things like trash & garden materials.

This was a long term project, and I only use the truck occasionally. It's not a beauty, but it's serviceable. Aside from rust, the interior has some issues. The major expenses were the transmission & wheels & tires.

The engine starts easily & runs good, once it has been run, but if it sits for more than a couple of days, it takes a lot of cranking to get it started. I researched the problem, and found that this could be a common problem with Edelbrock carbs. It might pertain to Holley or other carbs, but I can't be sure.

I found the cause and fixed the problem. I tracked the problem to the Edelbrock carb. The accelerator pump did not squirt fuel, after the truck sat for more than a few days. Edelbrock suggested that the float level was low. In an Edelbrock carb, the accelerator pump sits in a well that is filled with fuel from the right float bowl. If there is not enough fuel in that float bowl, the pump well will be dry, and the accelerator pump will not work. In my case it took until the fuel pump refilled the float bowl with fuel, until it would start.

I found that the float level was set low on the right float bowl. After fixing that, there was only a small improvement in starting after sitting. I had to wait a couple of days between tests, while debugging this.

I added an electric fuel pump, that ran when the starter was engaged, but was off for normal operation. That didn't help much either.
Finally I added a dash mounted switch, that activates the electric pump. I turn the switch on, about 30 seconds before trying to start the motor, then pump the accelerator pedal a couple of times, and then engage the starter. It will now start right up, without draining the battery. I turn the electric pump off for normal operation.
I used a Carter Electric Pump in line with the mechanical pump. Both are flow-through operation, so there is no problem turning off the electric pump. Also for safety reasons, I don't want the electric pump to run, when the motor shuts down.

Today’s fuel with the alcohol content and oxidizers will evaporate quickly. The fuel in the float bowl was evaporating fast enough, that the accelerator pump well was dry after the truck sat for a few days. Now I can fill the float

bowl, before starting, and have fast starts in any weather.

Dan Lee
Del Rods member since 2004