SCRIPPS-BOOTH REGISTER

LUXURIOUS LIGHT CARS

SCRIPPS-BOOTH CORPORATION

981 BEAUFAIT AVE.

NUMBER 19 By Ken Kaufmann, 735 W. Lemon Ave., Monrovia, CA 91016-2507 (626) 358-7327 DECEMBER 2006

ENGINE, TRANS, & RADIATOR FOR SALE

Hi Ken - Attached are photos of, I believe, a Sterling engine, #4635C, for a 1917 Scripps Booth. I also have the radiator, driveshaft, and exhaust pipe. I'm interested in selling these items or donating them to a non-profit auto museum. Do you know of anyone who would be interested? Thank you. Al Slotter, 1124 Mt. Pleasant Road Greensburg, PA 15601 (724) 836-2625

Hi Al - The "C" after the #4635 means this engine was built with Cast iron pistons, instead of the Lynite aluminums pistons. The Wagner starter on the right side appears to be a factory installation, but the Model C Parts List claims the Wagner starter wasn't used until the 1916 closed valve engines starting at engine number 10,000. That is, Car No. 5000 and above used the 10,000 and above, enclosed valve engine. Your #4635C engine also has the later style transmission. This #4635C is the highest open valve serial number known to date, so perhaps some of these improvements went into production sooner then the Parts List indicates? Or perhaps this Sterling engine #4635C was used in something other then a Scripps-Booth?

I am sure this #4635C is a late 1915 - early 1916 Sterling engine, but not sure if it was built for the 1915-16 Model C Scripps-Booth - or at least the starter on the right side doesn't look like the type that was used on the Model C. The Sterling engine was sold to some other small automotive companies and it might be one of these that used this starting arrangement? The "C" after the serial number 4635 refers to the cast iron pistons used while some engines had an "L" which stood for Lynite pistons -a type of aluminum. I figure Sterling built about 5000 of this open - valve engine and then came out with improved Sterling engine with the valve cover with the rocker arms mounted to the inside of the valve cover [Brush design]. Too bad this is not the Scripps-Booth Model G engine that I have in my car. Regards, Ken

Hi Ken - Do you know how many Model C cars are still in existence? You mention that it may not be a Scripps-Booth engine, but one used by another company. Do you know which other companies used the Sterling engine? Lastly, I gave you the wrong serial number. It is 4646C. Thanks, Al

Hi Al - We know of about 5 of the 1915-6 open valve cars and about 13 of the 1916-17 closed valve cars that started with Sterling engine serial number 10,001 and up. The other companies were the 1917-18 Monroe M3 roadster and Sedan; 1915 Cornelian, 1915-16 Sterling-New York, 1915-16 Fostoria, 1915-16 Harvard, and 1915-16 Macom [I think]. Sterling also built a flat head L type engine for the 1915 Grant 4 cyl runabout.

I think it was the Grant contract for 5000 engines, with Grant canceling the contract after receiving some 3000-3500 engines [with Sterling stuck for some built up engines and most of the components already purchased and inventoried.

Scripps-Booth Company got into money problems in mid 1916 because of the big expense of coming to market with the Model D FERRO V8 and the larger 4 pass chassis. When Scripps-Booth stopped paying its bills, the Sterling company was its biggest creditor, and since WC Durant personally and the Chevrolet Motor Co. were the biggest stockholders - next to Bill Little - so Durant basely stepped in and merged the Scripps-Booth Co. and the Sterling Motor Co together as the new Scripps-Booth Corporation. This was the same Bill Little who was under Durant as the Buick Plant Manager between 1906-1910 when he was replaced by Charlie Nash. Then still under Durant, Bill Little organized the Chevrolet Motor Co and the Little Motor Car Co in 1911.

Durant, in late 1912, organized the Sterling Motor Co. in Flint to build the big Six cylinder engines for the Chevrolet, but it was set up in the Chevrolet plant on West Grand Blvd in Detroit. When the Chevrolet and Little companies were merged together in June of 1913, and the Chevrolet Motor Co. was moved from Detroit up to Flint, it seems Mr. Little wanted to go out on his own [Like Louis Chevrolet did at the sametime] so traded his stock in Chevrolet to Durant for the Sterling Motor Co. where as the majority stock owner, he made himself the Sterling President.

It was after Sterling built out the Chevrolet Big 6, Little 6, and Chevrolet Light 6, that Mr. Little started turned his attention to building as we know it the small Sterling 4 in both OHV and L head versions. Unfortunately, the 1915-17 Sterling 4 proved to be a very weak engine, and the first thing Durant did when the Chevrolet company gained control of Scripps-Booth in mid 1916, was to install a dressed up version of the Chev 490 engine/gearbox [engines built before 1918 were built by Chevrolet's

owned Mason Motor Co.] that the Model G prototype was first displayed at the NYC Auto Show in January 1917.

When Chevrolet was merged into the General Motors Corp. in May of 1918 - Scripps-Booth was part of the deal, with GM taking over Scripps-Booth and made it GM's 7th car Division. The first thing GM did was to dump the larger Scripps-Booth Model H touring car with the FERRO V8, and mounted a Scripps-Booth style body on a 1918 Oakland chassis that used the Northway OHV engine - this was the GM's new 1918 Scripps-Booth Six.

I am lucky to have 3 restored cars that are interrelated as summarized above. 1.) 1912 Little Four runabout - built during the first week of production in mid May 1912 - believed to been the demonstrator car of the Dailey Motor Car Company, the Oakland California REO and Little dealer - was displayed in Harrah's Museum for 20 years. 2.) 1918 Chevrolet Model D5 "EIGHT" touring that was built at the NYC Plant in January 1918 with the Mason designed and built OHV V-8 engine. 3.) 1918 Scripps-Booth Model G roadster with Chev 490 engine which is my favorite tour car. I mention this because I sure would be interested in buying a spare engine and transmission for all 3 cars - so keep me in mind if you ever find one.

Thanks for the update on the block serial number - it appeared to me to be a letter '6' also. Regards, Ken

SCRIPPS-BOOTH MANUFACTURING PLANT

I very much appreciate your Scripps-Booth website. Is there an essay in one of the Scripps-Booth Registers describing the locations in Detroit where these cars were manufactured?

I read that a plant was built at 5718 Lincoln at the Michigan Central Railroad for the early production of the Scripps-Booth cyclecar. Perhaps the construction began or was completed in 1913. I also have read that Scripps-Booth cars were produced at a plant on Beaufait on the east side located between Sylvester and Gratiot. That plant is now used by Hamilton Steel Products. If you can confirm the location of the manufacturing plant or plants in Detroit, I will add them to my website. Thank you very much. Regards, Ren Farley

Hello Ren - No, I haven't yet done a story on the location and data/history of the Scripps-Booth plants in Detroit in my Registry newsletter. However I recently joined a form on Detroit's "OLD CAR FACTORIES" that I wrote the below information for between January 4th and 9th, 2006. Search Google for Old Car Factories and then enter archives - then #15.

I am still trying to figure out where the Scripps-Booth office was across the street at 981 Beaufait Ave. and a picture of this building. Also I would like more information on the long building that is now occupied by the Hamilton Steel Products as to when it was built and who owned it - since Scripps-Booth must have also rented this long building plant, since its 1915 and 1916 Annual Report states it only owned $11,137.92 in real estate, with the 1917-19 Reports listing $25,000. Then the 1920 Report listed $156,661 which would include the McGraw / Ford Ave. plant. Regards, Ken

SCRIPPS-BOOTH DETROIT PLANT LOCATIONS

The Scripps Motor Co. plant illustration at 629 Lincoln Ave [also used 650 and post 1921 it was 5817] was used in the first Scripps-Booth Cyclecar Co. sales folders, but only the prototype and first one or two show models were hand built in a small corner of this large marine engine plant by the newly formed, in late 1913, Scripps-Booth Cyclecar Co. JSB's Uncle Will Scripps owned this well established marine engine firm that lasted till 1956 and was also a large stockholder in the cyclecar company. The early 1914 Scripps-Booth Cycle Car Co. sales folders listed its first address here for promotional purposes at Lincoln Ave and the M.C.R.R. railroad.

In January of 1914 it was announced that the Scripps-Booth Cycle Car Company had purchased [most likely only rented] the plant at Beaufait Ave and Gratiot Ave. which appears on the Detroit Public Library's 1915 Baist's Real Estate Atlas map [I visited the DPL several times on vacation in the 1987 to 1998 period] as about a 100 by 100 ft square building – and the picture in some sales folders shows it as a 3 story building. This building was labeled in this map as just a "Cycle Car Co." which was located across the street on the east side from the lots of 1019 and 1021 Beaufait Ave which goes along with the listed address of the 1915 Scripps-Booth Co. at 1020-1030 Beaufait Ave. Of course by 1915 the Scripps-Booth Cycle Car Co. was reorganized into building the regular Model C roadster [dropping the Cycle Car from its name] as the Scripps-Booth Company.

Then about the time WC Durant, WH Little, and Chevrolet Motor Co. took over the Scripps-Booth Co. when it was merged with the Sterling Motor Company in July 1916, the office at least was moved down the street to 981 Beaufait Ave. for 1916 to 1920.

Sometime after Chevrolet joined GM Corp. in May of 1918, GM took over control of Scripps-Booth Corp. from Chevrolet and it was Scripps-Booth who GM purchased the ex-Saxon new plant [McGraw and Wyoming] in 1919 from the government for which Scripps-Booth moved into in early 1920. When GM discontinued the Scripps-Booth in April 1922, the plant was turn in to a reported Buick Closed Body assembly plant [not Fisher Body]. When Fisher Body bought the large ex-Durant plant in Flint - this Flint plant was converted into Fisher Body Plant No. 1 in 1926 to supply Fisher Closed Bodies to Buick, and when Buick moved out - the LaSalle moved in. Then Saxon expanded its factory space by taking over the old Scripps-Booth Beaufait Ave. facilities.

Unfortunately I did not notice that the long white roof factory building that extends to the south to Sylvester St. was once part of an auto plant. I was looking for a large plant on the west side of street for the odd numbers where the street number would have been at 981 Beaufait Ave. We now know this long building was once part of the Saxon factory plants at some time and also occupied by the Scripps-Booth Corp. before they moved out to its new plant on the West side at McGraw. This would have been the same time that the Sunny Line washing machine company moved into the former Scripps-Booth 3 story plant at 1020-1030 Beaufait Ave.

Don Bent in his new book on the history of the Flint Buick Plants reports that Buick used the 2416 Ford Road address for its Detroit Closed Body Assembly Plant No. 75. The address of Michigan Ave and Western seems like a stretch but appears to be about a block south of McGraw and Ford Road? This plant was 40 acres of property with the floor space being 360,000 sq ft.

The only address I can find so far for the plant when Scripps-Booth was in it was it was being called the Springwells Ave. Plant. They were supposed to have moved in on January 1, 1920 but had to wait a few months while the government had moved it stuff out.

The Chevrolet plant at 1145 West Grand Blvd. was also a Scripps-Booth plant in 1916 to about 1918 since it was the result of the merger of the Sterling Motor Company and the Scripps-Booth Co. Actually Chevrolet shared this plant with Sterling from the fall of 1912 until Chevrolet was moved to Flint in August 1913 – then Sterling took over the whole plant to build the Little and Chevrolet six cylinder engines a and small 4 cyl engine for the general trade including Scripps-Booth. The Sterling Motor Company was established by Durant in Flint in August of 1912. It purchased the ex Buick No. 2 engine plant on West Kearsley St. but never moved in with this plant being sold to the Mason Motor Co. Instead Sterling set up shop in the Chevrolet West Grand Blvd. plant under the management of Bill Little.

Little traded Durant his Chevrolet stock to buy out and run Sterling as a some what independent operation in October 1913 even thought Durant and the Chevrolet company retained large stock holdings. Sterling built all the 1913-15 Chevrolet 6 cyl engines [about 1500] and the 1915-17 Scripps-Booth Model C engine, 1917-8 Monroe M3 engine, 1915 Cornelian and the 1915 Grant engine. The Sterling Motor Co was merged with the Scripps-Booth Co. to form the Scripps-Booth Corp. in July 1916 with Sterling then becoming a division of Scripps-Booth Corp. It is likely the West Grand Blvd. property was sold by GM about 1919-20.

WANTS TO BUY A SCRIPPS-BOOTH CAR

Is there any active online site about Scripps-Booths? Any that are for sale? Thanks, Don Hughes, Sarasota, FL.

Is there any source of current...2006...news on Scripps-Booth cars, events, for sales, etc? I would appreciate knowing where this information might be available? Don Hughes, Sarasota, Florida. donwy@aol.com

I have watched / read the Scripps-Booth pages. Please let me know...Don Hughes, Sarasota, Florida
http://www.donhughesrealty.com/

A 1918 MODEL H, 4 PASSENGER, 4 DOORS

Several years ago Don Hughes asked me if I knew of any pre GM 1918 six cylinder, 4 doors, tourer car for sale? I replied that Scripps-Booth made the Model D, 4 passenger roadster before 1918 forgetting about the short lived Model H that was announced at the same time as the new six cylinder jobs on January 1, 1918. Some 324 were built in the first few 4-5 months of 1918 and filled the gap until the six cylinder models could get into production. This Model H had full size rear doors and an un-divided front seat and sold for $1285. There are no “H” survivors.

GRANDPA VAUGHN'S SCRIPPS-BOOTH

Hello “Ken - This is at best trivia, but thought you might want to know it anyhow.

My Grandfather, George W. Vaughn bought an enclosed Scripps-Booth, new in about 1918 no later than 1922. George was the "Road Engineer" for the Lehigh New England Railroad. He made a boat load of money, had his own train, and the number he paid for the Scripps-Booth was rumored to be about $2500.00, a kings ransom for the day. This all took place in Pennsylvania and New York.

My Grandmother made him get rid of his roadster, and buy an enclosed car (the Scripps-Booth) because of the new daughter!! Regards, David Pulling

Thanks David for the memories of your grandfather’s Scripps-Booth - the sedan was offered from 1918 till the company was closed down in April 1922.
Regards, Ken

NEW BOOK ON WILLIAM BUSHNELL STOUT

Hi Ken - My brother and I are writing a book on William Bushnell Stout who was instrumental in the design of the Model C. We are looking for any good pictures of the Model C or the Sterling motor to incorporate in our book.
Thanks, Steve Stout, San Jose, CA

Hi Steve, I would suggest you email Tom Booth, James Scripps Booth grandson, who has a very nice 1916 Model C 3 passenger roadster.

To clarify some of the timelines Stout wrote in his 1951 bio, I offer the following:
1. May 14, 1914 - MOTOR AGE reported that Stout resigned from Motor Age to Chicago to be Chief Engineer of Scripps-Booth Company in Detroit.
2. A big correction is the Model C, Model D, or Model G never had a "step down" design.
3. The floor boards and bottom frame rails sits on top of the frame which was the conventional design.
4. July 15, 1915 - MOTOR AGE reports that Mr. Stout was appointed Advertising Manager with the noted Mr. Brush to be a consulting engineer in place of Mr. Stout.
5. March 2, 1916 - MOTOR AGE reports that Mr. Stout was made the General Sales Manager when C.H. Booth, who was Sales Director and Vice President, was then appointed President of the now 1 million dollar Scripps-Booth Company.
6. November 30. 1916 – THE AUTOMOBILE - reports that Stout would resign on December 2nd from Scripps-Booth Corporation and to work for Packard Aircraft.

I have a 1918 Model G that has the much improved Chevrolet engine, clutch, and transmission then the very weak Sterling 4 cyl. job. The Sterling Motor Co. was mostly owned by Bill Little with the rest of it by the Chevrolet Motor Co. of Michigan and WC Durant. It was when Scripps-Booth took over the Sterling Co. in July 1916 that Durant got involved in Scripps-Booth affairs. This is the same Bill Little that helped Durant start the Chevrolet Company back in 1911. I also have a 1912 Little Four that was built in Flint in May of 1912.
Hope this helps, Ken

GILMORE CAR MUSEUM DISPLAYS A MODEL C

Hi Ken- We currently have, on long term loan, one of the Detroit Historical Museum's cars that they have listed as a 1915 Scripps-Booth Model C. This is what they had listed for the car:

Automobile, 1915 Scripps-Booth Cycle Car, a boat-tailed, three-passenger blue roadster with black fenders, upholstery, windshield frame, cream wire wheels and striping. The wheel base is 56 inches x 112 inches and the overall width is 64 inches at the fenders, 68 inches at the wheel hubs. The radiator ornament and hub caps bear an enameled emblem saying, "Scripps-Booth, Detroit." Purchased by the Detroit Historical Society for the Detroit Historical Museum in 1967.

Where can we locate the serial number of the car? I am doing the signage for the car and wonder how many were made. Do you have any idea how many 1915 Model C were built?

Jay A. Follis, Director of Marketing
GILMORE CAR MUSEUM
www.GilmoreCarMuseum.org

Hi Jay - I have never seen this car, but Scripps Downing, who was in charged of the Scripps-Booth Register before he died [and I took over in 1996], saw this Model C in storage 1994. He told me the nameplate was missing from where it should be on the board below the right side passenger seat. It is also missing on his Model C and my 1918 Model G too. He found the engine serial # stamped on the right front side of the block to be 1076(x) [the light wasn't very good and he couldn't read the last number] which was within 30-40 numbers of his own 1916 Model C engine of #10730. Mr. Downing stated this car is a 1916 model C and not a 1915 model.

Most sources claim Scripps-Booth made 7046 Model C's for 1915-1917. The 1916 Models started with Car Number C5001 and Sterling engine # 10001. I would break down 1915 production as 3900 units, 1916 as 2260 units, and 1917 as 886 units. Regards, Ken

MODEL D FOUND?

I got this email address from an internet search and thought you may be of some help to me.

I have a 1915 Scripps Booth cloverleaf roadster which I obtained from my father-in-law and his brother. It was found in an old shed by my father-in-law in Bedford County, Pennsylvania in the early 1950's. The serial number plate has been lost prior to me getting the car. I need help to determine the identification, if possible and any information to help me with this car. I have about 80% of the car; in need of fenders, I have 1 front and both rear in poor condition.

Any help would be appreciated. Bob Friedline

Hi Bob - so happy to hear from a newly found S-B owner. The 1915 model C [3-passenger roadster] had the Sterling built engine that did not have a valve cover. The engine serial # would then be below 5000 units. You should find the engine serial number below the front cylinder on the right side. The 1916 Models C used a Sterling engine with a valve cover that allowed easy valve adjustment and started at engine # 10,001 and up. The 1916 Model D was a 4-passenger roadster with the 2 seat in back [commonly called cloverleaf] with an isle between the 2 front seats. The Model D used a FERRO built V eight engine with serial series numbers starting with FS1to about FS2000.

I would be happy to help you and try and answer your questions. I have a 1918 Model G, 3 passenger roadster. Regards, Ken

1916 SCRIPPS-BOOTH V8 ENGINE

We have a Scripps-Booth V8 engine only (1916 aprox), complete but dismantled. My grandfather was going to restore the engine as he was an engine rebuilder, however he has recently passed away and now my grand mother wishes to sell it. We are in Australia and finding any information on it, is like finding hens teeth.
We are seeking the value of it and the possibility of a sale to a restorer? Regards, Greg Wolff.

Hi Greg, Thanks for contacting me concerning yours Scripps-Booth V8 engine. I know of about 3-4 Scripps-Booth 1919-22 six cylinders touring cars in Australia – but do not know of any 1916-18 V-8 Touring cars there. We do know that this V8 Tourer was sold by agents in at least NSW, Victoria, and South Australia. Eddie Thomas in 1940 had a Scripps-Booth V8 powered midget race car in the Melbourne area.

Have you found the serial number of your engine that is stamped at the top rear of the block? Did your grandfather rebuilt any thing on this engine or was it just taken apart? Were any parts cleaned or are they all still rusty? Where, how, when did he get this engine from? There is no service manual or parts list known for this engine, so having it all apart likely will make it harder to sell.

I have a friend in Sydney who is now completely restoring a 1918 Chevrolet V8 Tourer that was imported from the USA 9 years ago. He has several restored display Chev 4's engines in his garage on stands and might be interested in purchasing your engine, restoring it and displaying it on a running stand. Chevrolet took over the Scripps-Booth Co. in 1917 and when Chevrolet merged with GM in 1918, Scripps-Booth was made a division of General Motors.

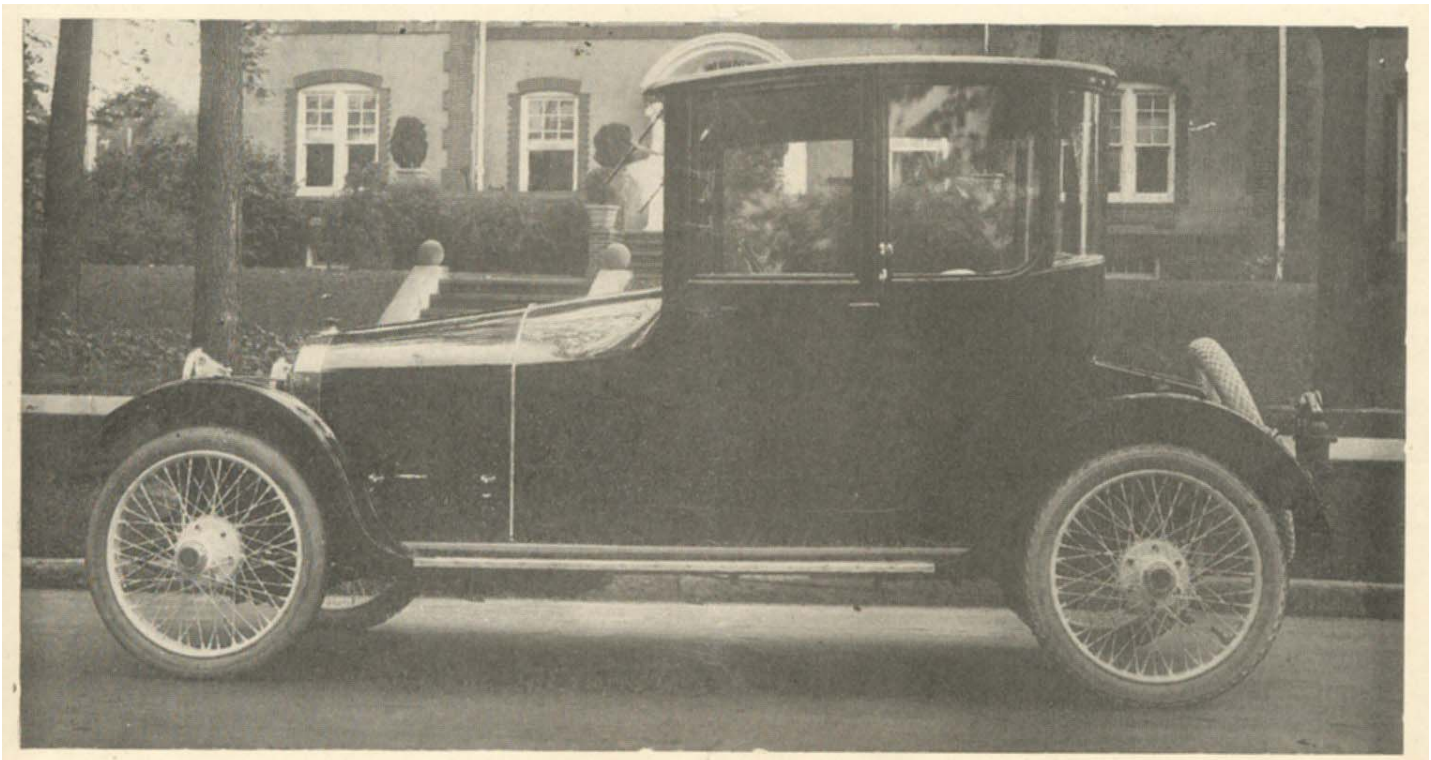
I would want to review some pictures before I could give you a fair worth estimate. There are no parts available for this engine so all new parts would need to be machines from scratch. If you live near Sydney, my friend could inspect you engine and give a value for it too. I hope this helps and will wait for your reply.
Regards, Ken

V8 ENGINE UPDATE

I recently was contacted by the legendary Sydney motor dealer Jim Broadley of his Diablo Motors who bought this V8 engine. It is hoped that Jim will finished up the restoration of this rare FERRO V8 engine.

TOM BOOTH FOUND THIS PHOTO

Hi Ken - I found this photo in the 1915 copy of Rider & Driver magazine. It shows the enclosed body version of the Model C. Do you know if any of these survived?
Regards, Tom Booth



THE NEW SCRIPPS-BOOTH MOTOR CAR

An Enclosed Model Introduced in Response to the Continued Demand for a Winter Body on this Popular and Reliable Chassis

Hi Tom - Thanks for the C Coupe photos. I sure don't know of any left around? I have a few ads that list a 1916 Model D coupe also. Regards, Ken

LETTER FROM ALAN

Hi Ken - I made it to Hershey to swap my G frame remains and rear, mostly exchange with Frank Kleptz. It worked out great, as we need to invest in a new home computer. He was supposed to give me 2 rough Houk wheels, but his wife had the other vehicle and couldn't be reached. I was to go back Saturday for more hunting, but the weather turned out to be a wash out. Frank is in need of brake drums and hubs for the G rear I had gotten from Mr. Geers years ago. Do you know of any stray G parts out there?

I told him of the C remains of Mr. Tom Ruggle, who was in Wichita Kansas and passed away years ago and left it to his relative in Arkansas who owns a trucking company. I had his address and phone but can't locate it. Can you help on that one? [Jerry Cook, 4125 Cook Rd., Bentonville, AR 72712 (479-273-3779)]. I think Frank would be interested if it remains.

I hope Frank builds that Vitesse replica, as I was thinking of building one too. That's his goal. [He is currently making a Vitesse repo.]

I'm still working between the 2 Brass Era shops and enjoying it. Talk soon, Alan

P.S. I got some AC Titans at Hershey & one on EBay.

ADAM HASS SARVER

Adam was born at Sarver, Pennsylvania, on December 25, 1866. He taught school in the Buffalo Township, Pennsylvania before becoming a traveling salesman for Leighner-Martincourt, buggy, wagon, and sleigh dealers in Butler. In 1888 Adam went into business for himself handling local sales for the Durant-Dort Buggy Company of Flint, Michigan. With this, A. H. Sarver started a 45 year association and close friendship with W.C. Durant, the buggy company President.

When Durant's Buick firm began the manufacture of automobiles, Mr. Sarver was awarded the Buick agency in 1905 for Western Pennsylvania. In 1907 he was appointed the General Manager of the Buick Factory Branch that was establish in Pittsburg. After W.C. Durant and his Chevrolet Motor Co. took control of the Scripps-Booth Corp. in late 1916, Adam Sarver was made in late 1917 by his personal friend, Mr. Durant, the President of the Scripps-Booth Corp. He remained as its President until 1921. After disappointing sales, GM liquidated its Scripps-Booth Division in April 1922.

Adam H. Sarver then became the Director of Durant Motor Inc. Detroit. He retired from the auto industry in 1927. Mr. Sarver died at the old age of 94 on September 11, 1960 in Palm Beach, Florida and is buried in the Sarver Vault, North Cemetery, Butler, PA.

LETTER TO COLIN ON CYL. COMPRESSION

I reviewed your table on the various combinations of Chev 4 cylinder bores and stokes, Compression Ratios as it relates to the Chev 4 maximum horsepower, and using the VE (Volumetric Efficiency) as a correction factor in the calculation of maximum hp. I have been wondering how checking cylinder pressure at cranking speed relates to the engine Compression Ratio? Could the same VE that is used at the maximum engine rpm also be used for the VE at cranking speed with the spark plugs removed?

SEARCHED THE INTERNET

A quick search on the Internet under the topic "Engine Compression Test" didn't result in any formula that would relate engine compression test pressures to the compression ratio. The only useful information found was

from a Model A Ford discussion group that stated 70-75 PSI is used as a good check compression figure for the A.

I did find this explanation for Volumetric Efficiency: VE is used to describe the amount of fuel/air in the cylinder in relation to regular atmospheric air. If the cylinder is filled with fuel/air at atmospheric pressure, then the engine is said to have 100% volumetric efficiency. If the cylinder is pulling in a vacuum, then the engine has less than 100% volumetric efficiency.

I learned that the VE for modern normally aspirated (NA) stock engines typically run between 80-89%, Hi Performance NA engines between 90-99%, and racing NA engines between 100-110%.

CYLINDER COMPRESSION CHECK

I checked compression on my 1918 Model G (Chev 4) engine [after replacing just the two worn down starter brushes – the other two still had 2/3 life left - in the REMY starter] and the engine then cranked great and started right up. I warm engine up with about 15 minutes of mostly idle, since the car was still up in the air on jack stands. I then checked compression with all the plugs out but throttle plate closed – I forgotten to block it wide open. Note the correct test procedure is to make a good 5 to 8 mile road test and block the throttle plate wide open so there is minimum restriction to the cylinder air flow.

I cranked for 5 cycles and recorded:

#1 - 60, 75, 75, 75, 75 psi;
#2 - 60, 70, 70, 70, 70 psi;
#3 - 60, 75, 75, 75, 75 psi;
#4 - 65, 80, 80, 80, 80 psi.

1928 ENGINEERING SPEC IS 88 PSI

Now the only Chevrolet 4-cylinder specification on cylinder compression I have ever found is from the 1928 Chevrolet Engineering Book, where it states the CR is 4.5 and the cylinder compression at 1000 rpm [therefore the engine is running at 1000 rpm on 3 of the cylinders] is 88 psi. To get 88 psi to equal 4.5 CR, the VE would have to be about 64% - the way I calculate.

My engine average cranking compression is 75-psi pressure. As an example, even though I suspect my measured 75 psi average is slightly lower than normal because of my incorrect test method, to calculate CR you would first need to convert the measured 75 psig gauge pressure to absolute pressure by adding 14.7 psia, which would give 89.5 psia. Then 89.5 psia divided by 14.7 psia atmosphere pressure at sea level times the assumed Chev 4 VE of .64 = 3.90 CR.

1914-27 COMPRESSION TEST SPEC IS 80 PSI

Therefore, the compression test specification for the 1914-27 Chev 4 must be about 78-80 psi cranking pressure, since 78-80 psi is 92.7-94.7 psig, divided by 14.7 psia, times the .64 VE correction factor = 4.0 to 4.1 CR.

I have seen it mentioned that normal Chev 4-cylinder compression should only be 60 to 65 psi? Maybe this is taken at 4000 feet elevation, with lower cranking speed with the three other spark plugs installed, a slower cranking starter motor, throttle plate closed, and an engine that is not warmed up yet?

Using the above formula and plugging in the assumed Chev 4 VE of .64, an engine with a 110 psi cranking compression would have a CR of 5.4. An engine with 6.8 CR pistons would then measure at about 141-psi. and a 10.0 piston would give 215 psi cranking compression – it would take a good 12-volt starter to crank this one!

Am I on the right track?

MY FRIEND COLIN REPLIES

The 106% VE in the formula is with engine running, wide-open throttle, so cylinder pressure is sealing rings and valve timing is also factored in. You will get different cranking pressure depending on valve timing changes. Increasing duration or intake closing point (later = retarded) will lower cranking pressure.

Compression begins when intake valve closes, not at BDC. If you check a Chilton's or similar manual, you will see the engines of comparable CR and maximum hp/torque RPM figure will have similar cranking pressure.

Whereas a 9:1 engine max power at 4000 rpm, may have a higher cranking pressure than a 9:1 compression engine max power 6000 rpm (due to longer intake valve duration etc)

We used to get the odd complaint from camshaft customers that they had lower cranking pressure after installing a longer duration camshaft. That's why compression ratios are higher on Hi Po engines; in part just to compensate for the decrease in compression 'time' with a bigger cam.

Back in the '70s fuel crisis a kit was put out with very high compression pistons and very retarded intake valve timing, net effect a standard cranking pressure (low rpm), but I guess theoretically a more efficient use of the fuel at higher rpm?

The port scavenging on Siamese ports 4 cylinders [like the Chev 4] may have a slight effect on cranking pressure too? Also of course valve/seat condition, ring end gap, ring groove wear etc....

After a new valve job, set clearances at various figures and compare cranking pressure changes too? I.e. 0.006" then 0.025"

An old cam grinder once told me that the "best position to install the cam is to keep advancing cam position until cranking pressure stops increasing." Never checked that one out - would be good on a dyno.

Your Chev 4 engine gives:
#1 - 75 psi; #2 - 70 psi; #3 - 75 psi; #4 - 80 psi.

Piston TDC 1.080," deck height with 0.060" head gasket = 4.5:1 compression ratio (assuming valve heads CC = spark chamber CC).

MERRY CHRISTMAS AND HAPPY HOLIDAY GREETINGS

The saga of my Model G will have to be continued in the next newsletter. I have added the SCRIPPS-BOOTH REGISTER and the Owners Address page to the back of this issue, since this newsletter is just six pages this year. There has as been several changes, and I sure there more changes I do not know. I will be posting this No. 19 REGISTER at my web site in the pdf format.

http://home.earthlink.net/~scrippsbooth/