



Long Rod, Short Piston



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Rod Ratios is a topic that some of you know has me “pre-occupied”. My Chevy experiences lead me to believe that the best combination for the olden days was the lowly 327. It had enough low-end grunt while giving me a very quick run to redline. The larger displacement small blocks yielded tons of torque but were just lazy reaching top end as a truck motor like the 454.

I was told that the performance difference is mostly based on the magical thing called rod ratio. Divide the rod length by the stroke to get this metric. Many agree that the 302 Z28 is a zinger with a ratio of 1.90:1. 1.70 is the ratio of Ford’s famous 302 (5.09”/ 3”). My stock 327 pushed 5.7 / 3.25 numbers for 1.75. Ubiquitous SBC 350 and its 400ci successor are 1.64 and 1.48 respectively. Most endurance racers today run with a range of 1.9 to 2.2. Chevy’s new NASCAR 358ci R07 engine has 3.25 stroke and varies the rod from 6 to 6.2” based on the track. It yields ratios of 1.85 to 1.91 to generate 9,300 to 9,600 rpm.

The theory goes something like this. Short piston rod length has a quicker turn around at both top and bottom dead center. Longer connecting rods stay a bit longer at the extremes and reduce the side loads thus less friction and wear because of a better angle to the crank also giving it more leverage. The delay allows slightly more time at the top leading to a more complete combustion. Better combustion translates to less detonation through less timing and permits a slightly higher compression ratio. Peak velocity is delayed somewhat for more filling on intake, grants longer overlap timing, but lowers scavenging of the exhaust gases at low rpm. Higher pin height improves the piston center making it more stable. You can also use shorter skirts therefore lighter pistons. Tensile loading is also lower as the speed is reduced at TDC. Chevy started its 265 in 1955 with a ratio of 1.9 as a favorite of hot rodders. Drag strip “Screamers” were the 283. It reigned from 1957 through the mid 60s used the same 5.7 rod / 3 stroke as the early Z28 and the 265. Not all big blocks are dogs. 1958 348 had a 1.89 ratio. Mighty fine 409 had 1.71 but both the 454 and 502 slipped to a stump pulling 1.53.

Ford started out quick too. I remember Dad’s 62 stick shift Fairlane with the 221ci small block, predecessor of the 260W, whose ratio was 1.80. The 260 and 289 had ratios of 1.79 (5.15/2.87) then they produced the 302 and 351W at 1.70. Alan Foster’s race winning Mustang uses a 351W stock rod ratio (5.95/3.5) but is highly modified for head flow and is internally balanced with a light rotating assembly. It screams down the straights at 7,200rpm and redlines well above 8,000. Our 351C (5.78/3.5) is fair at 1.65. Some of us have switched to a 6” rod to get back to 1.71. Tom Todak runs his 380C with those Chevy 6” rods on 3.75 crank for 1.60 ratio. His objective is a reliable mid range torque machine able to take the taller gears in his ZF. Art Stephens’ old 377C engine had no trouble getting the revs up quickly with its 6.125/3.7 for 1.66. But I eagerly await his new 408C engine with a 6/4 1.50 ratio. His right foot is about to test the heavily laden 4 bolt with all the right Australian BOSS goodies. The typical 427W uses 4.17 stroke and a 6.125” rod for 1.47 ratio: our Cleveland based 427 at 6.125/4.154 has a 1.485 ratio. Bill Wright lucks out by running one of these big cubes in a super light GT40. I wonder how fast it propels the car to 7500rpm? 911 Porsches are designed for 1.7 to 1.8 ratios. Remember that Viper does prove that even truck engines can deliver fast cars in the right combo.

The key seems to be the intake, exhaust, head, cam, valve train, and rotating assembly selected. The choices determine the flow possibilities so vital to extracting the desired response from the engine. Each designer chooses his own way to propel a car down the road. Horsepower is calculated by torque numbers, so, do you want big booms or lots of little booms? Unfortunately, I don’t know what is best. I only hope that you will tell me of your experiences and preferences. I, with your help, can then plan the rebuild of my engine.

Reminders: from rkunishige@hotmail.com. Please email needed corrections/additions to me.

Mar 1-2 **Willow Springs Open Track** sponsored by Jim Saxton 626 285-2024. West Coast Racing invites you to run all makes & models at speed on the Willow Springs road course in Rosamond, just north of Lancaster. Jim

and Cherie Saxton host both Pantera and Ferrari clubs for this two day event twice a year. TPOC helps registration Saturday as a fundraiser. So, bring your car and experience the fastest track in the west (often the site of new car testing as seen on Speed TV). The cars are divided into 4 classes based on your skill level from pro to novice (instructors provided) and car preparation. Or, come and make the TPOC treasury grow by helping with the registration and enjoy watching some very fast, expensive cars race. Be sure to offer a ride to the guy holding a helmet labeled with "ROD".

- Mar 2 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Mar 12 **TPOC Mtg** 7pm Mel's Drive-in 12241 Seal Bch Blvd, Seal Beach.
Mar 22 **March Field Air Museum** 8am dash from Donut Derelicts to Riverside to view our heritage & lunch. Make reservations w/Cindy Harris at skylife@verizon.net - \$10 admission & 15.95 lunch.
Apr 9 **TPOC Mtg**
Apr 13 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Apr 18-20 **Long Beach Grand Prix.**
Apr 30-5/3 **Las Vegas Fun Rally & Track Event** Register early. See your POCA Newsletter.
May 4 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
May 14 **TPOC Mtg**
Jun 8 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Jun 11 **TPOC Mtg**
Jun 14? **TPOC Swap Meet** at Bud Williams' garage 9am-2pm. Bring your stuff to sell or bring cash to carry goodies purchased. Sandwiches and sodas provided. See Bud's complete collection. It goes well beyond that shown in POCA's article. I want a ride in the Sunbeam Tiger.
Jul 6 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Jul 9 **TPOC Mtg**
Aug 10 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Aug 13 **TPOC Mtg**
Aug 15-17 **Monterey Concorso Italiano** Black Horse Golf check with PI. Sign up now. Rooms are limited.
Sep **Belmont Shore**
Sep 10 **TPOC Mtg**
Sep 14 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Oct 08 **TPOC Mtg**
Oct 12 **LB Swap Meet** at Long Beach Veterans' Stadium 6am-1pm.
Nov 12 **TPOC Mtg**
Nov **Willow Springs Open Track** sponsored by Jim Saxton 626 285-2024.
Dec **Christmas Party**
Dec 27 **Gondola Ride**

March Air Museum admission includes a simulator ride, 71 aircrafts, interactive exhibits even see some future technologies. Be sure to ask Bill Wright which plane he flew. www.marchfield.org for more info.

Las Vegas is once again upon us. So, look at your POCA newsletter for further details and plan to participate. Bring your car to show at the Fremont Display or track it at the Speed Trials.

Willow Springs hosted by Jim & Cherie Saxton's West Coast Racing in conjunction with both Pantera and Ferrari clubs give you the chance to take your car on the world famous high speed track. Street cars abound as the Novice group makes full use of the free instructors to show the best line to take on each corner. They also advise you on the techniques to gain full control of your car while extracting the most from its features. Remember that there are four run groups based on your experience and two days packed with lessons to help understand your car's limits and at the same time improve your driving skills. Come out to participate or watch the excitement. (Cherie prepares a free lunch for TPOC members.)

Events are an essential part of the club's wellbeing. Please consider hosting one of your choosing. The key is to bring like-minded people together for some fun. Contact Dave with your idea and let's schedule it up for this year. It would be a special treat if some of the ladies would come up with an idea or more. I know that I sometimes get stuck in a rut and can't seem to get those wheels in my mind spinning in a new direction. Simply, I am asking you, ladies, for directions.

Meeting Site Sought that will draw more members to attend. If you know of a place that can accommodate us, please speak up. Our intent is to have easy parking, good food, separate room to conduct the meeting, individual billing to free up those who need to leave early and a locale better suited for the majority of members. Talk to Dave.