

Background and history of the G240RC engine and its possible inclusion as an engine option for use in QSAC competition.

During the 2017 calendar year, there was discussion amongst the sitting Co-Chairs at the time to attempt to implement the G240RC, as an option, into the QSAC Rules Package.

The QSAC National Tech Director at the time, Bill Scott, had been doing numerous tests/testing with G240RC engines; both complete engines as well as long-block conversions. The dyno numbers themselves were very benign and very similar to what was being shown in equivalent tests/testing with the G-23RC/G230RC engine. There is a file or two available to the public on the QSAC.org website under files/downloads section of the website.

With the 2017 Nationals taking a considerable amount of time and effort, conversation was put on the backburner until much later in 2017. At the time, there were some concerns about the G240RC; the fact that it had three bearings was one concern. It was publicly known that some of the East Coast racers were taking out the third bearing. This presented an issue because it “implied” to a racer that he/she would need to modify an engine, before even turning a lap, in order to be competitive. The sitting Co-Chairs agreed upon a path that the maintaining of the third bearing was in the best interest of serving QSAC and its members. There was also discussion about attempting to “put the toothpaste back into the tube” with regard to using optional head gaskets for the G240RC. It was agreed at the time that the gasket options would remain OEM only, and no allowance for aftermarket copper gaskets for the G240RC would be allowed.

There was also discussion about trying to leverage a change to the existing G-23RC/G230RC rules to take away the optional gaskets. The mindset was to try to diminish the impact or implied impact that a “built” engine was needed. It would also bring a level playing field between the G-23RC/G230RC and G240RC should the G240RC ultimately get added as an option to the QSAC Rules Package.

The idea of the implementing the G240RC as an option engine for QSAC racers was presented to the Impact Parts Committee for their review and input. It was a resounding 3-0 vote of “NO” from the three person committee (Mike Sadler, Ken Leiker, and Scott Harper). NOTE: QSAC had reached out earlier in the fall to ask about the long term viability of the G230RC and their continued production to which they responded that they had zero intention of ceasing production and that the G230RC was used in multiple applications; not just the hobby side. The general theme from the IPC was that it was not needed, but that sufficient leg work had been accomplished that if/when it became a “need” instead of a want, the organization would be in that much better of a place to transition into the G240RC generation. Some argue this should have been the end of the G240RC discussion, but the sitting Co-Chairs agreed in principle; that having an option seemed like a reasonable idea.

At this point, the sitting Co-Chairs discussed their path, and sought input and counsel with former Co-Chairs about what it would take to get the G240RC added to the QSAC Rules Package. Even without the support of the Impact Parts Committee, and whether it was right, wrong, or indifferent, the sitting Co-Chairs felt that because they were not “changing” what was currently available; they were just adding

an engine option for the membership. The sitting Co-Chairs elected to move forward with the implementation of the G240RC into the QSAC Rules Package. The sitting Co-Chairs felt that they could bypass the RRC and leverage the change resting on the fact we were not “changing” a rule, but rather adding another option for racers. Anyone that was present or involved with QSAC at the time knows this was NOT well received by the membership and caused quite the up-roar (and in retrospect, rightfully so).

In the aftermath of the response from the membership and online community, the sitting Co-Chairs received further counsel and input from former Co-Chairs. After this counsel and discussions between sitting and former Co-Chairs, the implementation plan was pulled back for re-evaluation. The Co-Chairs started discussing what/how they would/could go about trying to reconcile the unfortunate situation that they had created. In the meantime, Scott Harper (then Rules Committee Chair) took the initiative to help the effort and started evaluating a G240RC. Scott found areas of concern that were not discussed or mentioned by the sitting National Tech Director, Bill Scott. Two glaring issues Scott found were the following: there were captured washers used to retain the cylinder head, and the ports of the G240RC were of different shape/configuration relative to the G-23RC/G230RC. While Bill Scott had evaluated the engine to the best of his ability, in hindsight, these are two critical features that should have been documented and would require the differences to be documented in the QSAC Rules Package. While the general theme of the process of how the G-23RC/G230RC/G240RC would be technically inspected would be the same, the numeric values would need to be evaluated and established for the QSAC Rules Package. QSAC had reached out the Husqvarna-Zenoah to ask if they would provide the location and tolerance of their port windows, but Husqvarna-Zenoah were unwilling to accommodate the request. At this point, the general idea was to step back, re-baseline, and humbly submit a proposal to the RRC for consideration of including the G240RC as an option engine. This would be outlining and defining needed differences between the G-23RC/G230RC and the G240RC.

With the resignation of one of the Co-Chairs, and the appointment of their replacement, there became a stalemate between the two Co-Chairs. The two Co-Chairs were not in agreement about implementing the G240RC. With no agreement, there was no direction forward. NOTE: it is generally accepted that if the two sitting Co-Chairs are not in agreement on a task, no action is taken. A compromise was made to ask and allow the G240RC to be tested in the 2018 season, if the host track allowed, in the interest of providing further input to the organization regarding the performance difference (if any) between the G-23RC/G230RC and G240RC. The feedback that was received was little to none. However, the feedback that was received was very neutral; there was no noticeable difference in performance on the track.

Fast forward to the fall of 2020; since the request for testing of the G240RC in the winter of 2017/2018, there has been a renewed interest in adopting the G240RC as an engine option for competition in QSAC sanctioned events. Numerous tracks out West as well as out East have been openly allowing the G240RC as a legal option. There are no reports of a performance advantage from either side of the country, and the feedback received suggests that there is a fair mix of both engines being used on either coast.

Given the renewed interest for officially allowing the G240RC as an option engine, QSAC took the re-baseline and re-evaluate the G240RC through a new lens. QSAC purchased five G240RC engines to be technically inspected as well as evaluated for differences with the G-23RC/G230RC. The first G240RC was completely torn-down to evaluate as well as compare and contrast the internal pieces with a G-23RC/G230RC. The other four G240RC engines were left in an “as received” condition and were measured and evaluated in the same manner as would take place with a G-23RC/G230RC. This task was completed by two separate individuals. Neither individual evaluating the engines were aware of the resultant measures of the other individual until their evaluations were complete. The measured numbers between the G-23RC/G230RC and the G240RC engines were nearly identical. The measured numbers were also consistently within the tolerance windows provided in the QSAC Rules Package for the G-23RC/G230RC engines. As an organization, this was very encouraging to learn. The engines were evaluated by Todd Holloway and Terry Rea; both have a tremendous amount of knowledge, experience and wisdom. We are appreciative of their time and effort; thank you, gentlemen.

In the chart below, you will see the resultant measurements for the four engines as well as the standard inspection numbers outlined in the QSAC Rules Package for the G-23RC/G240RC engines.

<b>G240RC TECHNICAL INSPECTION MEASURED DATA vs G23RC/G230RC TECHNICAL INSPECTION ESTABLISHED STANDARD VALUES</b>					
		<b>G240RC ENGINES</b>			
<b>CURRENT 230 TECHNICAL INSPECTION VALUES</b>		<b>S/N 20195005879</b>	<b>S/N20195005885</b>	<b>S/N 202003005894</b>	<b>S/N 202003005897</b>
<b>INTAKE PORT FULL OPEN (IPFO)</b>	<b>.070 OR MORE</b>	<b>0.082</b>	<b>0.094</b>	<b>0.087</b>	<b>0.084</b>
<b>INTAKE START OPEN (IPSO)</b>	<b>.520 OR LESS</b>	<b>0.481</b>	<b>0.490</b>	<b>0.487</b>	<b>0.483</b>
<b>MAX PORT WINDOW SIZE</b>	<b>.425 OR LESS</b>	<b>0.399</b>	<b>0.396</b>	<b>0.400</b>	<b>0.399</b>
<b>EXHAUST PORT START (EPSO)</b>	<b>.650 OR MORE</b>	<b>0.712</b>	<b>0.710</b>	<b>0.700</b>	<b>0.705</b>
<b>MAXIMUM STROKE</b>	<b>1.105 OR LESS</b>	<b>1.101</b>	<b>1.098</b>	<b>1.099</b>	<b>1.102</b>
<b>IGNITION TIMING (OPEN)</b>	<b>OPEN</b>	<b>0.193</b>	<b>0.201</b>	<b>0.200</b>	<b>0.201</b>
<b>NOTE: ALL MEASUREMENTS ARE IN INCHES</b>					

Additionally, the volume each cylinder head can hold was evaluated. Both the cylinder head from a G230RC and a cylinder head from a G240RC held the exact same volume. Each cylinder head held approximately 57 ml of fluid volume. Both cylinder heads were 2 ml less than 2 oz. volume.

All of the above background and information brings us to where we are today. As QSAC Co-Chairs, we are willing to accept the G240RC as an engine option. However, the inclusion of the G240RC requires some updates and changes to the QSAC Rules Package. We will be presenting this background document along with a formal rules change proposal to the Rules Ratification Committee (RRC).

Thank you,  
Denny Andrews Jr.  
Todd Bishop  
QSAC Co-Chairs