

Formula First, The “New” Formula Vee

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Formula Vee is a class of racing that is unlike any other. Conceived in 1962, it is believed it to be the oldest and most successful road racing class in the world, bar none. It has reached this status for one simple reason. A rock solid rules package based on inexpensive and readily available Volkswagen 1200 Type 1 “Bug” components and then keeping those basic rules unchanged for the next 40 plus years. This gave Formula Vee competitors the ability to compete year after year, at a national level, without having to purchase new equipment every season. In some cases, a 20-year-old Formula Vee’s is just as competitive as a brand new car.

As the class closes in on it’s fifth decade of success, problems can be seen in the not too distant future. These problems stem directly from the exact reason why the class has been so successful in it’s past, no rules changes. The 1200 Volkswagen was last produced in 1965. In 1983, VW of North America scrapped out the last of the 1200 specific parts. The aftermarket took over at that point as many “Bugs” were still on the road. As time presses on, the availability of quality new aftermarket parts has been thinning to a minimum. Today, most Formula Vee’s are built utilizing a majority of used/recycled component parts. Safety issues are beginning to appear due to the age/fatigue and quality of available new and used/recycled component parts. Specifically, front spindles and rear brake drums that break when under a high cornering load. Some high quality replacements are being manufactured on a very limited basis, but the associated costs make these parts very expensive. All Formula Vee parts suppliers agree that over the next decade, Formula Vee specific parts will only get harder to obtain, the quality will continue to degrade and prices will continue to escalate.

The formula of the class has always been to focus on the ability of the driver, not to focus on a marquee or model. Volkswagen 1200 components were used for the class because they were inexpensive, in extremely high production and very available. Most people don’t know that Volkswagen had no interest whatsoever in backing Formula Vee until after it was a huge global success.

Formula Vee as a class has done an excellent job of keeping its basic rules concept unchanged for the past 40 years. In order to continue that idea of a “poor mans” race car, that keeps the focus on driver ability rather than a large budget , to survive and prosper in the next 40 years, Formula First will build new cars or convert existing Formula Vee cars with a rules package that will maintain the objective of the original formula.

The following items are the out of date Volkswagen components that are the main source of these potential problems.

Problem Areas:

- VW 1200 (40 hp) Engine
- Link Pin Front Axle Beam
- 4 Wheel Drum Braking System
- VW Wheels and Narrow Tires
- Overall Length and Wheelbase Dimensions
- Class name or Identification

Here is some better definition in each of the areas of concern.

VW 1200 (40 hp) Engine

Current Problems:

- New parts very limited availability
- New race engine costs
- Age of used engine parts – Crankshaft, Con Rod and Rocker Arm Breakage
- Quality of new parts – Exhaust valve head breakage

Suggested Solution:

- Volkswagen 1600
- New parts unlimited availability
- New race engine costs
- Many aftermarket parts available specifically designed to increase longevity

Link Pin Front Axle Beam

Current Problems:

- New parts very limited availability
- Complete assembly costs
- Age/safety of used parts – front spindle breakage

Suggested Solution:

- Volkswagen ball joint type front axle beam
- New parts unlimited availability
- Improved safety and strength
- Complete assembly costs

4 Wheel Drum Braking System

Current Problems:

- New parts quality/safety – rear drum breakage
- Drum brakes out of date
- Constant maintenance
- Continuous source of difficulty/balance

Suggested Solution:

- Volkswagen disc brakes front and rear
- New parts unlimited availability
- Improved braking/safety
- Complete 4 wheel disc brake cost

VW Wheels and Narrow Tires

Current Problem:

- Slick tire longevity/costs out of control - \$600 per set-per weekend
- Slick tire increased suspension loads and cornering speeds
- VW 5 lug wheel creates “stigma”

Suggested Solution:

- Spec tire focused on extreme longevity – seasonal tire
- Spec steel or aluminum wheel with increased width to eliminate VW skinny wheel “stigma”

Overall Length and Wheelbase Dimensions

Current Problems:

- Limited height and weight of driver – 6’ 2” and 220-lbs. max.
- Formula Mazda, Formula SCCA “stealing” large racers due to bigger sized cockpits

Suggested Solution:

- Increase wheelbase and overall length to accommodate any driver – 6’ 7” and 270 lbs. Big people want to race too!

Class Name or Identification

Current Problem:

- Formula Vee has not been the preferred place to start your racing career since 1968.
- Formula Vee has a VW “stigma” and VW has not wanted anything to do with us since 1971 after the start up of Super Vee.

Suggested Solution:

- New class of Formula First made up of newly constructed and converted FV cars. Market itself as a true low budget starter class – the US classes that currently are marketed as a starter class is FF 2000 Zetec, Formula SCCA, Fran Am and Formula Mazda. The focus with Formula First is to be a true “low-budget” starter car that can be purchased for under \$20k (race ready) and seasonally raced, at a competitive level with a budget of \$10,000 per season to spend on tires, travel, entry fees and some crash parts.

On a global basis, we are not the first FV racers to see these potential problems. In fact, the USA is the only FV racing country using the original 1200 rules. The rest of the FV world has upgraded their Formula years ago. The most recent country to upgrade their FV program to Formula First was Australia. In 2001, contact was made with the FV association of New South

Wales and a review of their proposed Formula First rules was forwarded to a small group of FV racers in the USA.

In 2002, a “test” car was built to the basic Australian rules to check out each upgrade area as well as build support for the concept. Formula First test car programs have been successfully used in many places around the world. Remember that resistance to change has been the key to FV success, so it has been imperative to establish that Formula First is not going to change FV, it is a separate class that is based on the same ideals as Formula Vee and that any FV owner can convert his car to Formula First status with minimal effort and money. The USA test car, dubbed the “committee car”, was dual purpose in its own right. The concept was tested for the newer model VW parts and the car itself was a 30-year-old “Lynx B” Formula Vee that was converted to the First spec to prove that conversion was a very viable alternative and that these new rules would not alienate any current Formula Vee.

The “committee car” hit the track in 2002 and was an instant success in regards to the reception of the concept. Within weeks of the first committee car testing, two other Formula Vee’s were being converted to the specifications developed for the testing of the concept.

Testing/Performance Results, FV vs. First

Here are some basic statistics of the cars:

	First	FV
Weight:	1100 lbs.	1025 lbs.
Displacement:	1600 cc	1200 cc
Horse Power:	80+	55+
Torque:	100 lb ft	70 lb ft
Gearbox:	4-speed synchro	4-speed synchro
Brakes:	4-wheel disc	4-wheel drum
Wheels:	13” x 6”	15” x 4”

In the summer of 2002, the first “First” outing was a test day at Gingerman Raceway in South Haven, MI. A small group of people traveled from various states to see the car actually driving on the track. After a long day of discovering small gremlins, the committee car ran about 20 laps and got to a pace close to the FV track record.

Road America, in August of 2002, was the first “wheel to wheel” race the First car had seen. SCCA does not classify Formula First at this time, so the car falls into the “catch-all” Formula S. A brief meeting with the Stewards got Formula S moved out of the Formula “Alphabet” (FA, FC, FM, CFC, FF, CFF, DSR, CSR, ASR) race group and moved in with the more

speed appropriate Formula Vee race group. The weekend proved to be very interesting as many interested on lookers, including many SCCA officials visiting the event, got their first really good look at the concept of Formula First. With most of the Gingerman gremlins gone, the car ran quite well with a fast lap equal to the Formula Vee track record.

In October of 2002, the committee car made the trek to Mid-Ohio. At this event, FS was already grouped with FV making the race weekend that much smoother. Again, the car ran fine, but an oiling system “bug” was discovered and it could not be fixed at the track. The car ran regardless and finished without a problem. The best time was in the 1:42.5 range, not quite to the FV record but it was acceptable considering the oiling problems.

Over the 2002/2003 winter, the car got a “once-over” including SR Racing going through the engine. For the most part, no significant problems were found.

May of 2003 took the committee car to Grattan Raceway outside of Grand Rapids, MI. It started as a typical cold and wet spring weekend, but the weather improved as the weekend progressed. The car ran flawlessly with a fast time equal to the FV track record. Most Vee’s running that weekend ran a good 3+ seconds per lap slower.

In June of 2003, a First conversion car owned by Andy Shelton was raced at Nelson Ledges. The car was a Citation FV that Andy had set up to convert back and forth between FV and First. Andy ran the race weekend with only minor “teething” problems and was very pleased with the results of his conversion labor.

Brain fade on the part on the operator/driver caused a short weekend at Black Hawk Farms in July of 2003, the next outing for the committee car. The engine had developed a valve cover gasket leak. It was fixed, but yours truly felt that the engine oil level should be just fine and did not check it. Note to readers: always check the oil level no matter how trivial it seems. I am really looking forward to getting back to BFR, as the torque of the First engine will make driving a blast.

In August of 2003 the committee went back to Road America. Thankfully, the weekend was almost completely un-eventful. The committee car lowered it previous best time to 1:41.3, which is a good 3 seconds faster than FV track record.

In September, two weeks before the SCCA Runoffs, Mid-Ohio was the site of the first competitive First race. The committee car was in attendance as was Andy Shelton with his Citation conversion. We both decided to start at

the rear of the FV pack (as always). Unfortunately, Andy's engine expired after 5 or 6 laps of the Saturday race. Andy commented that he had spent only \$1000 on his homebuilt race engine as he really just wanted to "test the waters" of Formula First. Andy is currently building a new engine for his recently purchased Caracal First conversion. The committee car ran great and turned a time of 1:40.5, just a tick below the FV Runoffs race record.

It should be noted that the committee car has been running this entire time, July of 2002 until September of 2003, on one set of Hoosier R60 tires. They finally gave up after heat cycle #27 at Mid-Ohio. We also checked the brake pads and after 12 races, the pads had an average wear of .060" (1.5 mm). At this rate, they should last a good 4 or 5 seasons.

Cost Analysis, FV vs. First

The majority of a First car or Formula Vee is the same, so this analysis will focus on their differences

	First	FV
Front Axle Beam (complete)	\$900.00	\$1100.00
Steering Gear	\$250.00	\$100.00
Wheels	\$55.00	\$55.00
Transaxle	\$1200.00	\$1300.00 (x4)
Engine	\$3800.00	\$7000.00
Tire Cost	\$625.00	\$540.00
Tire Yield (cost per useable heat cycle)	\$26.00	\$67.50
Complete Race Ready Car (Average)	\$17,000.00	\$21,000.00

As of this date, 15 cars are built, under construction or planned to the conceptual rules that were laid out when the original idea was formulated. These cars are being constructed and planned by individuals and Formula Vee manufactures such as Womer, Vector, Stinger, Adams, Mysterian, Campbell Motorsport, Wasp and Jacer.

In closing, Formula Vee racing is not in any immediate trouble that needs corrective action and the great racing it has provided will continue for years to come. In fact, all of those involved with Formula First feel that Formula Vee should remain the institution it has become. However, the budget minded racer needs to be looking towards the future to see how a new class can improve their status and insure that driver ability, not annual budget, is the top priority.