



MASTERPIECE IN METAL

WORDS MARTY FOLKA // IMAGERY BOYD JAYNES

A TOYOTA TREASURE

THE ICONIC "015" RIDES AGAIN

In case you haven't noticed, there is a growing segment of the *Dirt Sports Nation* that is becoming increasingly smitten with our sport's rather colorful past. Perhaps this a direct result of the feel-good retro General Tire NORRA Mexican 1000, or that some of our audience is getting a bit more mature. Certainly we have been fans of yesteryear since our first issue, a love affair that threads from the building of our VW "Elf" sedan to the monthly "Hourglass" vignette.

It's within this context that we proudly rolled this this month's "Masterpiece in Metal" into Boyd Jaynes' photo studio, as well as inviting key members behind its legacy for the accompanying, exclusive roundtable interview.



Built in 1993, this truly incredible Toyota factory Trophy-Truck is the final keystroke to a prolific collage of engineering and victory that defines the often overused term "Commitment to Excellence." In the case of the former Toyota powerhouse organization known as Precision Preparation Inc. (PPI for short), for years the factory gave the talent-rich organization the leeway and financial backing to take off-road motorsports to unimaginable heights.

This is the newly restored Toyota "015" Trophy-Truck last raced in anger in November, 2000 at that year's SCORE Baja 2000. Driven in that event (and the millennium's BITD Nevada 2000) by both Toyota's reigning truck hero Ivan "Ironman" Stewart and PPI newbie Larry Roeseler, "015" dropped a valve while leading the long run from Ensenada to Cabo San Lucas. Unknown to most at the time, that drivetrain failure would mark the end of the line for an off-road powerhouse that went back to 1983 when the relationship between Toyota and PPI was born.

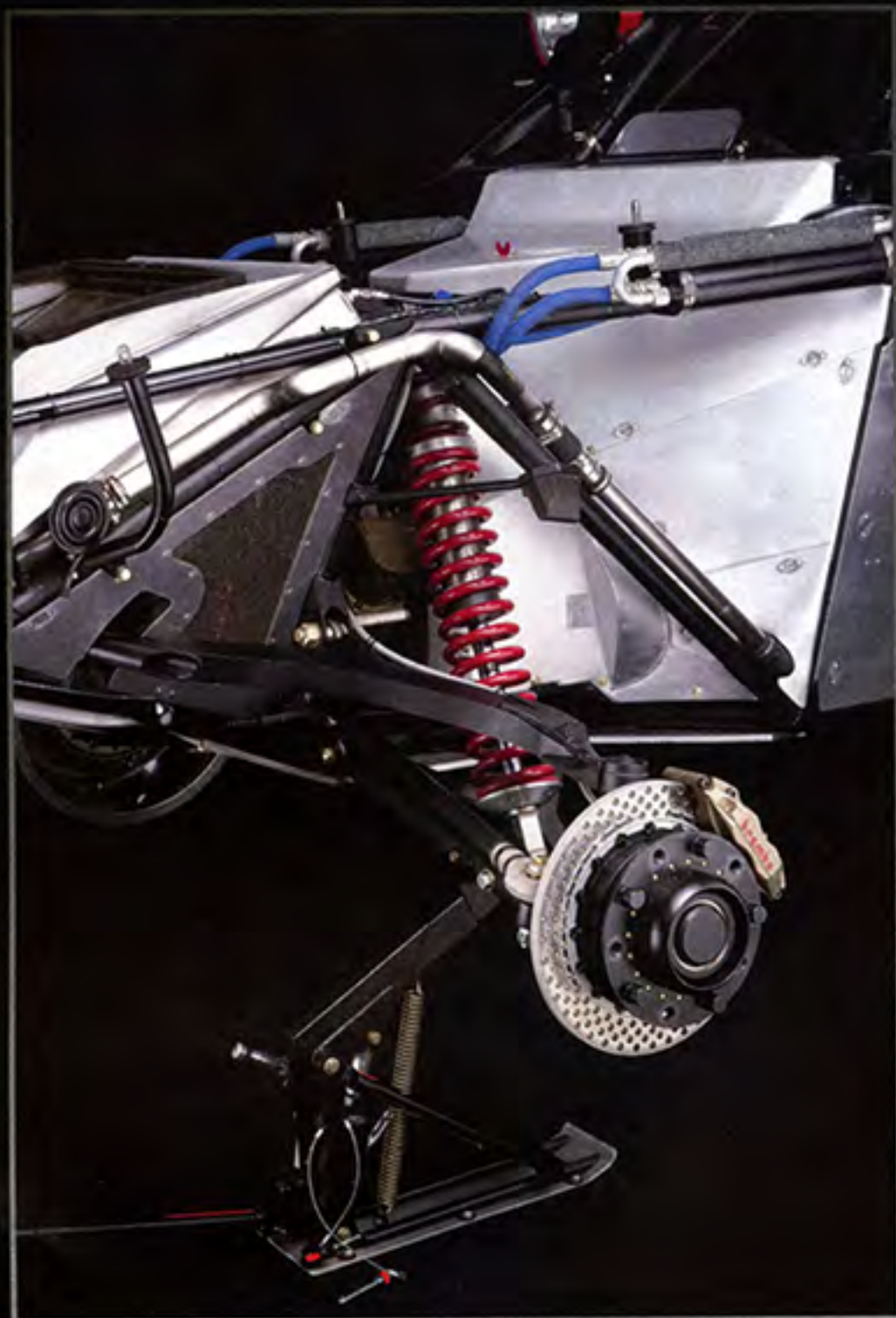
Penned by the late Ted Mangels (who in 1967 not only set the first Baja four-wheel record with Bruce Meyers but also won the first NORRA Mexican 1000 with Vic Wilson), Toyota "015" was completed in 1993. It replaced the older PPI "010" truck that's still owned by Toyota and housed in their corporate museum in Torrance, California.

This was the ride that finally gave PPI's founder Cal Wells III, Ivan Stewart and team leader Tommy Morris their first trans-peninsula SCORE Baja 1000 victory in 1998 (see this month's Hourglass story) and four SCORE Baja 500 wins.

Despite the fact it was created almost two decades ago, today the Toyota "015" is clearly still a motorsports masterpiece. Unlike today's more conventional Trophy-Truck designs, "015" is a mid-engine, independent rear end configuration that is almost entirely comprised of one-off, intensively engineered components with very few off-the-shelf parts at all. The price tag to build her was into the seven figures, and even more was spent as this special part of our history competed at the top level of the sport for seven years.

Recently restored to its former glory by Morris and some of the experts who worked on her during the PPI heyday, "015" is still owned by Cal Wells, but is for sale via RK Motors in Charlotte, North Carolina. While only the future knows what the ultimate fate of Toyota "015" will be, for now we are honored to share this historic icon with you as this month's special Masterpiece in Metal.



**LEFT**

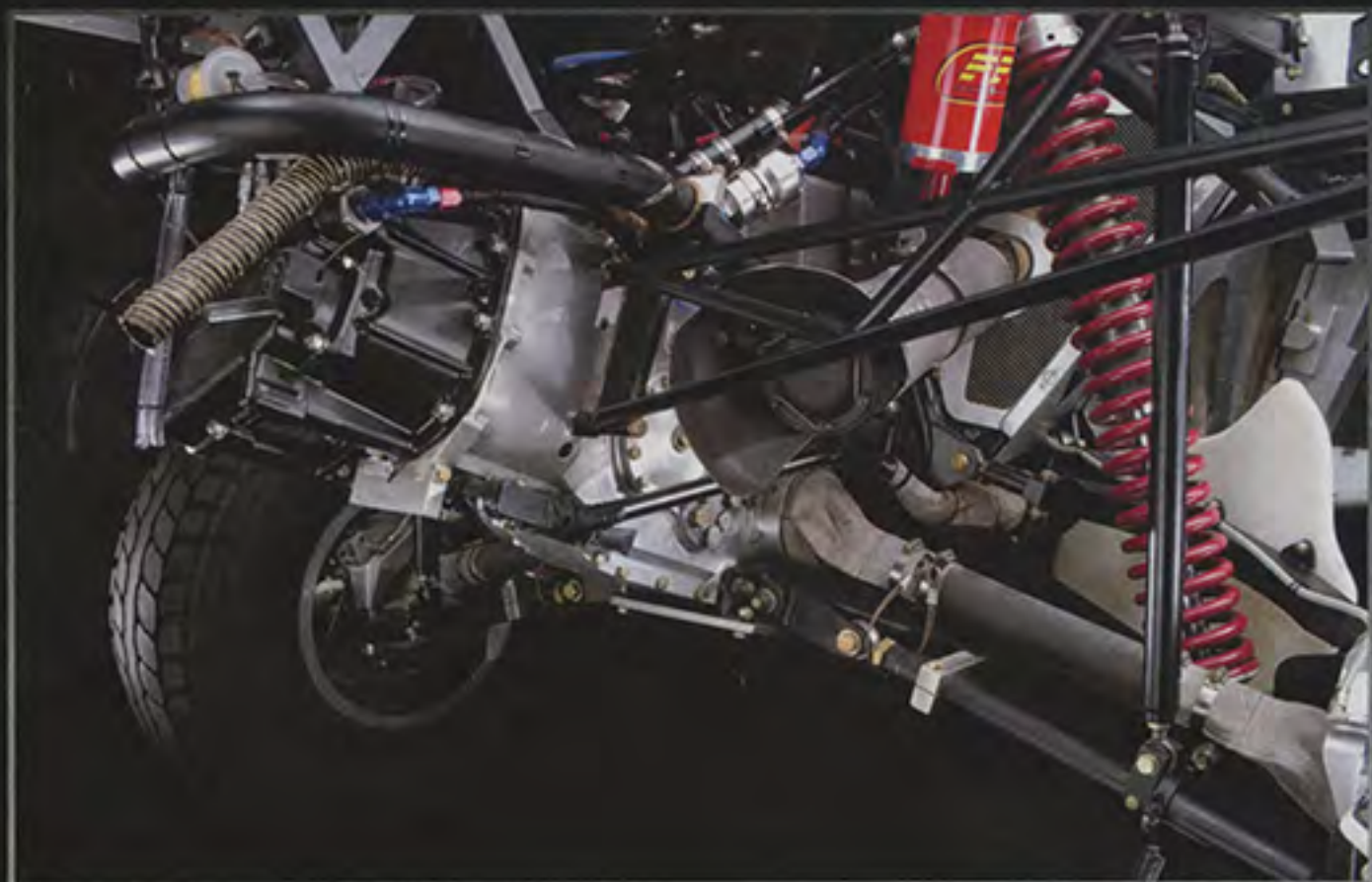
Like the rest of this exotic racer, the front section of the Toyota "015" is all business. Like most of the truck, the carefully engineered dual front A-arms were custom made by the crew at PPI. Even with a front track width of just 80 inches (as compared to today's norm of 90-plus inches for Trophy-Trucks and Class 1 cars), this configuration provided Ivan Stewart with 22 inches of wheel travel. That wheel movement is controlled via a single internal position-sensitive coilover shock created by PPI and Bilstein. Unique front rotors and rotor hats were custom made by the skilled machinists at PPI, while a Brembo caliper slowed the ultra-fast Toyota down. Unknown by most, the truck had special power brakes fed from the power steering system.

**RIGHT**

One of the most sophisticated rear ends ever to grace the off-road racing world is at the heart of the "015"'s exotica. Instead of dealing with the handling compromises found via a more traditional solid rear end, late PPI designer/genius

Ted Mangels and Tommy Morris held fast to using an independent rear end. Mimicking the the front suspension, the Toyota's rear configuration was good for 22 inches of travel, which was ideal to allow for enough performance in rough terrain while eliminating the chassis roll of more travel – the real secret to the truck's nimble handling and speed on dirt roads and tight corners. Like the front end, the rear suspension is also controlled by a single custom PPI/Bilstein position-sensitive coilover shock with a single Eibach spring. Brakes are also PPI-created rotors on custom PPI hubs with a large Brembo caliper mounted at the highest point of the rotor. A close up on the rear hub/brake assembly shows incredible attention to engineering, fabrication and detail only possible with factory support like Toyota's. Note the ultra-slick Teflon deflector to prevent rock damage to caliper.





LEFT

The key component to this one-of-a-kind Trophy-Truck was centered around PPI's use of an exotic VCG 200 gearbox section (in black) mated to a PPI custom billet transaxle case and internals (silver case). Originally found in the IMSA GT prototype cars, the five-speed Hewland relied on equally space-age CV joints created by PPI. For a long time, Morris admits that finding a grease capable of withstanding the extreme heat caused by the hardworking joints was almost impossible. The team finally came upon an aerospace grease that worked, but needed freon to remove! Mil-spec 300M axles were also specially created by PPI that allowed them to twist (much like a torsion bar) and reduce the loading and torque spikes through the entire drivetrain system. PPI-created leather CV boots are also visible.

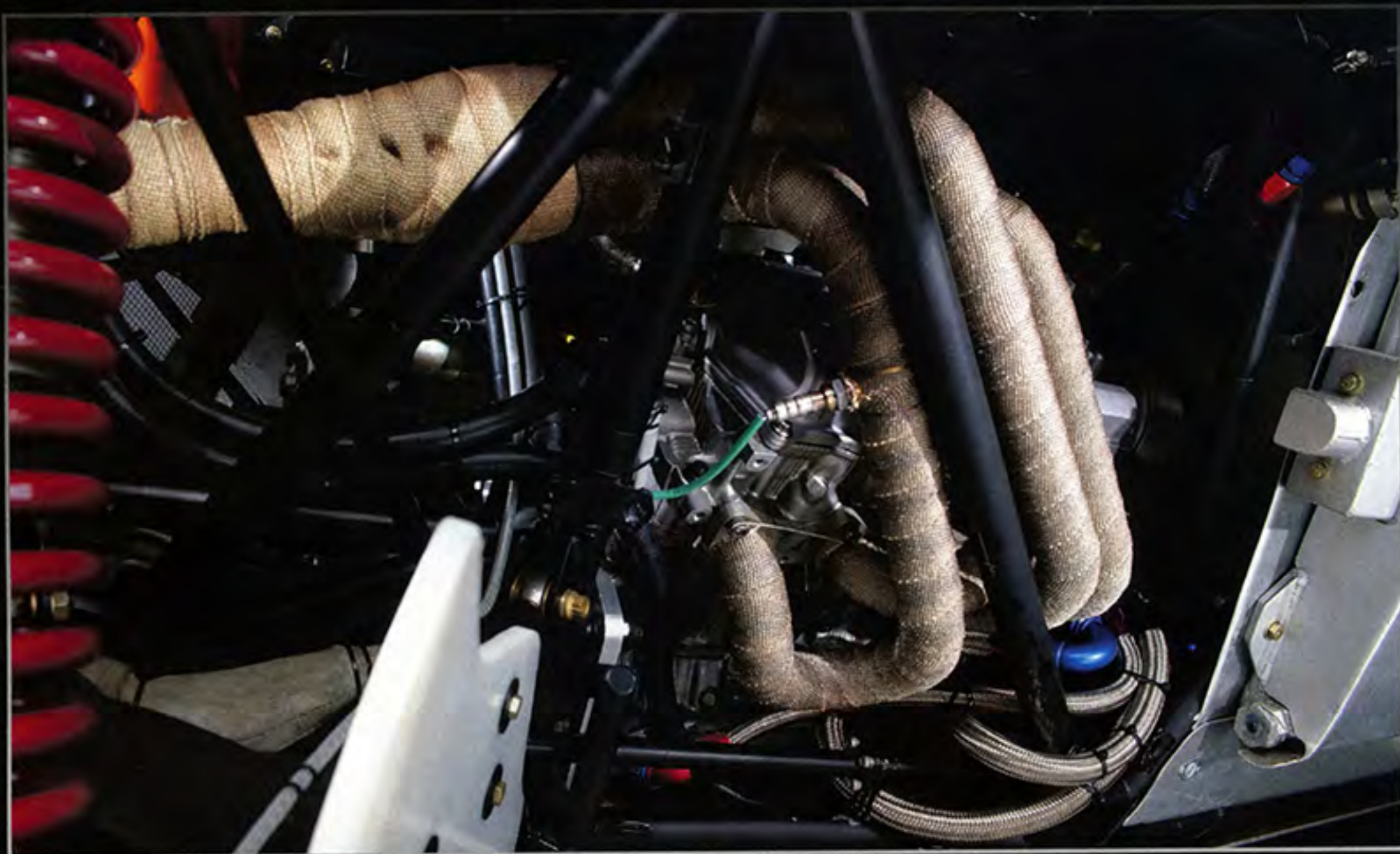
BELOW

The low slung, lightweight nature of "015" is evident from this angle. With a reported race-ready weight of just 3,900 lbs, the Toyota had a potent power-to-weight ratio and a top speed of 140 mph. Thanks to the extensive PPI pit support network, the team was comfortable with Stewart having just one spare tire and wheel combination as well as no spare parts or tools! The 42-gallon fuel cell that sits at the truck's center point is unique in that its outer casing was formed of heavy aluminum so it could serve as a structural (stressed) member of the chassis. The truck's low stance was a key to its success despite the compromise in handling very rough, whooped-out terrain.

RIGHT

While it's likely that the truck would rely on now-proven sequential shifting, back then gear selection in "015" was done by a more standard shift pattern. Note the custom leather boot to protect shifter's mechanical components.





ABOVE

While the original engine configuration of "015" was a highly strung Toyota Racing Development (TRD)-built V6, eventually the need for a more powerful V8 became obvious. To keep up with the competition, the TRD engine wizards created an exotic power plant comprised of a Toyota/Lexus aluminum block and heads with top-flight racing componentry like Carrillo connecting rods and J.E. forged pistons. The four-cam DOHC engine made more than 560 horsepower at a reported 8,400 rpm, which made a beautiful noise when ducted via custom headers and Borla exhaust pipes. According to Morris, however, the rev-limit was held at 8,000 for reliability.



ABOVE/LEFT

The legend of Ivan "Ironman" Stewart was forged in his success of racing alone—with no relief from co-drivers or mechanics. This was his place of business, and the Toyota's cockpit and center seat configuration reflects Stewart's well-earned reputation. A single digital dash serves as the vehicle's only instrumentation, while all the switches in the upper left control the myriad Hella HID lights. Because the Ironman was so dependent on his vast crew for support, not one but two separate radios (at bottom right) ensured the team's in-race communications. Another unique aspect of the cockpit? No GPS unit to aid in guiding Stewart through the desert. Instead, the effort relied on homework, knowledge and lots of prerunning. While Ivan's ultra-tough persona was magnified by his insistence on using an open-face helmet and goggles, this trick telescoping Lexan windscreen (left) was a key to not being pelted by debris from other competitors. **DS**



BUILD SHEET PPI TOYOTA "015" TROPHY-TRUCK

POWERTRAIN

ENGINE:

302 cubic-inch Toyota/TRD
DOHC V8

BUILDER:

Larry Slutter

MAX HORSEPOWER:

560 @ 8,400 rpm.

MAX TORQUE:

397 lbs-ft

MODIFICATIONS:

Custom Lexus/Toyota aluminum
block and heads, J.E. pistons,
Carrillo rods

INDUCTION:

EFI via eight Redine/Weber throttle
bodies and ECU

TRANSMISSION:

Custom Hewland VCG 200 gearbox
mounted to PPI custom five-speed
transaxle

SUSPENSION

FRONT:

Double A-arms designed by PPI,
22 inches of wheel travel via PPI
coilover internal position-sensitive
shocks, external cooling, Eibach
dual stage springs

REAR:

Independent double A-arms
designed by PPI, 22 inches of
wheel travel via PPI coilover internal
position-sensitive shocks, external
cooling, single Eibach spring

COOLING

C&R custom aluminum radiator
with Earl's trans cooler

PLUMBING

Earl's

WIRING

Gary Powell/Proformance
Engineering

BRAKES

FRONT:

PPI 14-inch rotors and hats with
Brembo calipers

REAR:

PPI 14-inch rotors and hats with
Brembo calipers

WHEELS/TIRES

WHEELS:

PPI-built custom billet 17x7
beadlocks cast from special blend
aluminum

TIRES:

37x12.50x17 BFGoodrich
Baja T/A

EXTERIOR

BODYWORK:

Carbon/Kevlar body, custom
PPG paint

PAINT:

PPI and Chris Hukill

INTERIOR

MasterCraft seat and tool/goggle
bags, Simpson belts and harnesses,
Pi digital dash, on-board fire sup-
pression system, first-aid and sur-
vival supplies with aerial flares, mil-
spec switches and wiring.

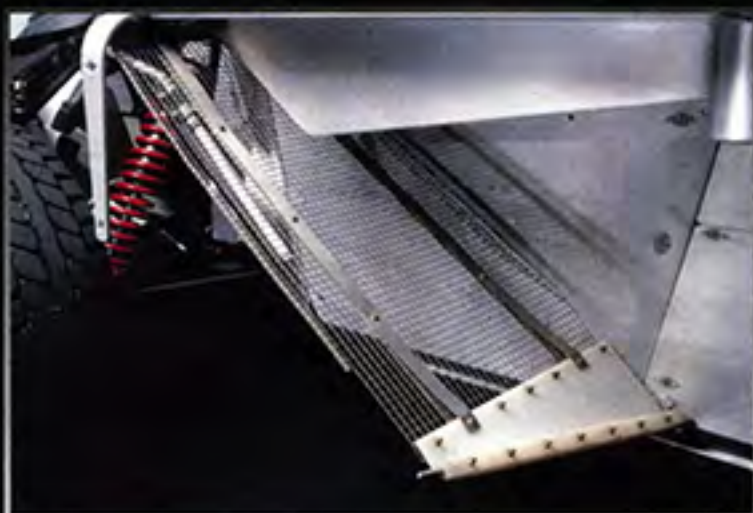
GENERAL

CHASSIS:

Custom chromoly tube frame
chassis by Precision Preparation
Incorporated (PPI).

DIMENSIONS:

Wheelbase:	120 inches
Overall Length:	188 inches
Overall Height:	64 inches
Track Width:	80 inches
Overall Weight:	3,900 lbs.



ADDITIONAL INFORMATION

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Tommy Morris, Ivan Stewart,
Cal Wells III, Cal Senior
(from left to right)

THE MEN OF "015" PART 1

WHEN WE SHOT THE FAMOUS PPI/TOYOTA "015" TROPHY-TRUCK,
WE COULDN'T RESIST THE CHANCE TO INVITE SOME OF THE MEN BEHIND
ITS LIFE FOR A ROUNDTABLE REUNION. HERE IS OUR EXCLUSIVE INTERVIEW.

It's fun to relive history, especially when the subject matter at hand is a flat-out game changer. From the time we were granted the opportunity to bring the refurbished PPI/Toyota "015" into our Masterpiece in Metal studio we knew it was something very special. This truck, along with its older "010" predecessor, were two incredibly revolutionary and winning factory Trophy-Trucks that are likely the most recognized and successful vehicles the sport of desert racing has ever seen.

But, while seeing and photographing the truck one more time before it was shipped off to Charlotte, North Carolina and eventually sold to a private owner, we wanted the experience to be just a bit more. The craftsmanship of each intricate weld, aircraft-grade bolt or carbon/Kevlar body panel, while combined to create a very mechanical masterpiece, only tells part of the story.

With the help of *DS* contributing writer "Professor" Tommy Morris, we managed to assemble the human side of the "015's" legacy for a special luncheon reunion that included Precision Preparation Incorporated (PPI) founder Cal Wells III, Wells' father Cal Wells Sr., famed Toyota driver Ivan "Ironman" Stewart and Morris himself, who was the PPI team manager for the duration of the entire PPI/Toyota factory off-road race program.

Please enjoy our exclusive roundtable interview with these special titans of our sport. This month these heroes discuss their roots, finding a home at Toyota, getting their start in the desert and selling "mini-trucks."

DS: Well gentlemen, thank you for coming. We are all here in one place again -- minus some hair, obviously.

Ivan: It's funny you mention that. I am still blessed to have enough hair, but I always feel bad for the guys at the barber-shop who would do anything to have hair (Cal III raises his hand). Actually, now that's the best part about my life, is that I can just be anybody I want to be. I now have a business card with nothing on it except my name.

DS: Well, it's hard to admit that the race truck actually has aged better than we did!

Tommy: You're right! (laughs) Actually the paint on this truck is 11 years old and just touched up by Chris Hukill, the original guy who worked at PPI.

Cal III: You are right. Tommy and his crew did a fantastic job on this restoration and making the truck actually run again. It's great to see that after all this time.

DS: Let's go back to the beginning. How did PPI start?

Cal III: We incorporated in November of 1979, and actually hung out a shingle on our little building in Westminster, Calif.

Tommy: I actually didn't get there until September of 1982, so I was a little late into the early deal.

Cal III: Oh, that's right, it's hard to image those early years without you Tom. We were actually just hobby shop racing, and our first customer was Joe MacPherson, then actually Tommy in his old Class 8 and then Scoop (Vessels) and then Charlotte Corral. But really, Joe was what got us going. I left working for him and worked for (off-road pioneer) Drino Miller for six months just screwing cars together. Just to show

you how long ago I was there, he was running Sleepy Tripp's midget car! Then he did a Can-Am program for a while and at that time I really thought I wanted to go pavement racing, so I wanted that experience with him. But the off-road thing was where it was at, really, and I needed to open my own shop to make that happen.

DS: Cal Senior, did you pass along any mechanical prowess to your son?

Cal Sr: Oh no. None. Nothing whatsoever. I am absolutely not a mechanic. Cal built them and I drove them. We built some buggies at home, a Funco SS-1 and Funco SS-2.

Cal III: We actually won the SCORE Baja 500 and took a second in the Mint 400 in those cars, which was actually a bigger accomplishment because the Mint had 60 cars at that time.

Ivan: What I remember from that time is the fact that I was driving for Charlotte Corral and we were having all kinds of problems being based out of Bill Stroppe's shop. Then Charlotte found Cal somehow, and I had heard about him too, so went down to his shop. You had just opened it, but it was beautiful, which is just how Cal does things. It impressed her and impressed me, and even though you didn't have a lot of cars there you had stainless steel benches and it was painted a beautiful blue and yellow. I remember thinking you must have had talent, even if it was for painting! (laughs). It was a beautiful shop, and once we made the switch we started winning races.

DS: Tommy, you were racing in Class 8 at that time yourself, correct?

Tommy: Yes, it was a car that Cal had built. I would go down to the shop and stay at his house and work on the thing day and night. I was basically a customer back then with Jim Hart.

An early image of PPI's Steve Millen (left) and Ivan Stewart.



DS: When was this?

Cal III: The first contract that we signed with Toyota was in 1982, and we first started racing in '83, which was for the MTEG series. Mickey put that series together by going to all the manufacturers to fund this thing called the Manufacturer's Cup.

DS: How did he do that without a series?

Cal III: It was Mickey Thompson, there wasn't any obstacle he couldn't climb. And, by that time, Ivan and I had worked together on the Ford (Class 8), and when Charlotte decided she wanted to do something different we (Ivan) stayed in touch. So, when this Toyota thing came up it's like, "Hey Ivan, I think that you can actually not have to string fence anymore, but this could be your career."

But, I was bidding against seven other guys for the business. At first I thought I had the Mazda business but Walker (Evans) got it – which wasn't a bad decision by them, but we didn't get it. Mickey helped me a ton with the Toyota guys. There was a motorsports manager there by the name of Lee Sawyer, who ran their GTU (sports car) program at the time, and we got along really well. There were seven guys who went in and bid, and we got the job. That's when we hired Ivan.

DS: It's still amazing that Mickey had the ability to sell a concept to major manufacturers before even the first race.

Cal Sr: Well, Mickey could talk a wolf off a meat truck (all laugh). He talked to those guys (manufacturers) to come up with money and got support from Mazda, Toyota, Ford and Chevrolet so that they could race each other inside a stadium. His idea was to replicate

off-road, because nobody could ever see it. And, Lord Almighty, it took off like gang-busters.

Ivan: He hit the timing perfectly, because he had all those people who wanted to make a name and reputation that they could be as tough and durable as the "big three."

DS: So it all started for PPI with the Toyota mini-trucks, correct?

Ivan: God, I have always hated that name mini-trucks. The good news is that Mickey was brilliant and came up with the name Grand National Sport truck, which was just fine with me.

DS: And the first chassis were built with stock steel cabs?

Tommy: They were steel cabs. They were

tiny. We first built them in 1983. They were just this little thing...

Ivan: Oh, I remember that because I was always cracking up my elbows in those things.

Cal III: Yep, but then they let us build real racecars and boy they were really something.

DS: So, your first drivers in the MTEG series were Ivan and Steve Millen?

Cal III: Yes, that's correct. We first had Steve, then Robby Gordon, then Rod (Millen).

Ivan: That's right, at that time Robby was only about this tall (holding his hand about three feet off the floor).

Cal III: Yeah, well, he still is about that tall.... (laughs)

DS: So, that program started taking off, and you were getting internally recognized within Toyota. Did the effort win right away?

Cal III: We didn't win the first race, but we did win the first championship.

Ivan: I don't remember who won that first race either, but I remember guys like Rick and Roger Mears racing, Josele Garza (an IndyCar driver), Walker and others. It was starting to grow, and I could see there could be some potential there. You know, what Cal was doing, his professionalism, and Mickey Thompson, it was all there...

One of the first PPI/Toyota short-course trucks.



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DIRTSPORTS

The dynamic duo:
Ivan Stewart (left)
and PPI founder
Cal Wells III.



TRACKSIDE PHOTO

One of the earliest PPI/
Toyota desert trucks.



TRACKSIDE PHOTO

Cal Sr: And, you have to realize we went from Pomona Fairgrounds to selling out Anaheim Stadium. That was a pretty good jump. The first couple of races had like 12,000 people at first and then at Anaheim it was standing room only.

Tommy: Yeah, you realize there were 68,000 people there?

Ivan: Yes, and they (the fans) even stood out in the rain to watch us.

DS: Now Cal, as the business owner behind all of this, were you leveraging all you had resource-wise to make sure Toyota's program was as good as it could be?

Cal III: Oh yeah, we weren't in the black at first. I borrowed money from my parents. Our first contract with Toyota was small. And, it grew, to help us do what we wanted to do. I took on a "spend it and it will come" attitude.

We invested everything we had, every bit of life we had, to be successful. We were competitive people. Whether we were successful on that given day, whether it was Ivan's drive to be the best, or Tommy's or mine, we worked very, very hard to win at everything we did. We didn't win everything all the time but it wasn't from a lack of effort. But the success in stadium led to the first desert contract...

DS: Was that in 1986?

Cal Sr: No, that was back in 1984.

Tommy: We built four brand-new trucks. The two desert trucks, the one for Butch Arciero and myself, and mine went to short-course because we didn't have them done yet. So that would have been 001 and 002, then we finished 003 and 004.

Cal III: And, those days it was really great.

We would be at the corporate headquarters all the time, I can't remember how often we were in Toyota's corporate atrium.

Cal Sr: Well, let's face it, they (Toyota) sold more mini-trucks because our (PPI) mini-truck did so damn well, let's be honest about it.

Ivan: Well, their timing was perfect because Toyota needed to build their brand – and we just kept beating the big three. Toyota would do all the advertising that said "we beat Ford, we beat Dodge, we beat Chevrolet." Then we would win a championship, then another championship, and they (Toyota) kept telling everybody. They were selling trucks like crazy.

Tommy: Toyota was really good because they didn't just support the race team, they'd also use Ivan for personal services, they would do commercials, they would do print ads, so they really touted what we did. We still had to do the work, but then they'd back it up by doing all the advertising. One thing we were really good at, and Cal would really work on us hard, would be that every year we had clipping services get us every newspaper and magazine article, so every season we had a book we'd send to Toyota about that thick (holding his fingers about three inches apart). And, at that time, we were their most cost-effective program per impression, we were their most viable program -- period.

DS: So you guys can say clearly that this program sold trucks, no question about it, to an entire generation.

Cal Sr: Well, people laughed at them (Toyota trucks) before the success in racing trucks. Everybody was like "what's a tin-can from Japan?" But then they started winning and by God all of the sudden now everybody wanted one.

Ivan: I can't tell how many people came up to me and said, "I bought my Toyota truck because of you guys, and what Toyota is doing in off-road racing." I mean lots and lots of people.

Next month we will bring you Part II of our exclusive sit-down with PPI's brain trust, including stories of how "015" came together, and how their partnership won so many races and championships. Stay tuned. **DS**