

Rocket Power!

Olds Specialist Dick Miller Readies a Rocket

By Scott Parkhurst

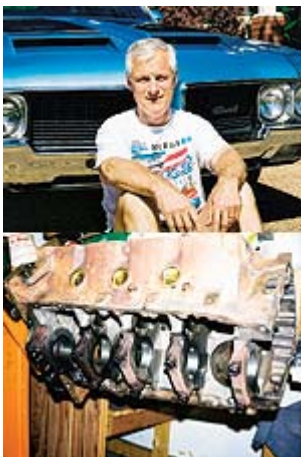
As small-blocks go, the 350 Olds doesn't get much mention. It's wrong, too--since the basic design is both **durable** and full of power potential. How much potential? Oldsmobile expert Dick Miller feels there's enough to slay the giants gunning for the Engine Masters title, and he's willing to show us how.

Experienced tuners know the Olds design allows big-block heads to be bolted on the small-block, and Dick plans to take full advantage of this by topping the block with a pair of aluminum aftermarket Olds heads. Developed to feed 400ci and larger Rockets, the Edelbrock possess more flow capability than the 365ci small-block should ever need. It's getting the air in and out of the engine effectively that Miller will **focus** on. He feels that if he can do this, the weight penalty incurred by the heavier Oldsmobile rotating mass will not affect him.

Educated gearheads also know that Olds made a 350ci diesel engine based on the traditional gasoline design, and these beefy blocks have proven to be solid foundations for high-performance gasoline engines. Interestingly, Dick has chosen to begin with a more "garden variety" 350 Olds gas block. He explains: "The diesel block would be stronger, but it uses big-block main bearings and requires a different crankshaft. I could not have run the steel crank I wanted without having one completely custom-fabricated. I already had a forged-steel factory crank from an old 330 that will work great for this, but it limits me to the non-diesel block. At the rpm levels the Engine Masters Challenge is being run, I feel this is the better option. If someone is planning to build a serious 350 Olds for street [pump gas] use, this is the route I'd recommend.

"If a guy wanted to push a small-block Olds to the 700-horse level for a racing effort (and believe us, it's possible--Ed.), then the diesel block would be worth the extra effort."

So, can this '70s-era Rocket 350 be pushed hard enough to win? Only time will tell, but until then, we can show what Dick Miller has chosen to arm his Olds-based engine with. If you've been following along with the other Engine Masters Challenge entries, or if you're an Olds fan, look over his parts selections carefully and compare them to the others we've featured in past issues. There are some distinct similarities and some glaring differences, and the more you know about all of it, the better educated you'll be on picking a winner. If you're considering an Olds 350 for your own project, following Miller's recipe will reward you handsomely, and he'd be happy to help you out in achieving your goals.





The first step is to match and port the oil pump housing and pump boss. This DMR-built oil deflector is used as a template for both the block-side pump boss and the pump casting itself.



The next step in oil control is to use these main bearing galley restrictors. Limited to a .125-inch hole, they keep precious oil in the bottom end of the engine. Enough lubricant finds its way to the top end to keep the valvetrain happy but can starve the mains without these restrictors in place. These are not too difficult to install.



The lifter bore oiling holes are also restricted, this time down to a tiny .040-inch hole. That's still plenty of oil to lubricate the lifters, but limiting oil flow to the top end is the key. How small are these restrictors?



They're quite tiny and can be difficult to handle or install. Dick recommends careful handling here--these little plugs can get lost quickly, and no one wants small parts like this dropping into their engine.



The crankshaft is from the rarely seen Olds 330. Few know about these '60s-era cranks, and they are getting fairly rare. As Dick says, "They're still not as rare as the 455 steel cranks, but they're getting harder to find." These forged-steel parts have some quirks (we'll get to that later) but offer a great starting point for a solid 92-octane Olds 350 buildup. Miller has some of these



The logic here is easy enough to understand--there is such a wide selection of small-block Chevy rods on the market today, trimming the mains down to size pays for itself in being able to get off-the-shelf connecting rods. The final stroke length is 3.475 inches, resulting in a 365-cube displacement when teamed with the 4.087-inch bore. The crankshaft counterweights were

cranks in stock if you're searching. The crank was resized by Crankshaft Specialties in Memphis, TN, and the rod journals were turned down to 2-inch diameters for use with common small-block Chevy rods.

then coated with an oil-shedding coating by Polymer Dynamics, better known to engine builders as PolyDyn. The final weight of the machined crankshaft was 47 pounds.



The pistons were crafted by Diamond and are a zero-deck design. The top ring is located .200 inch down from the piston deck, and all three rings check in at traditional 1/16-, 1/16-, 3/16-inch-thick dimensions. The pistons weigh 486.2 grams. Note the large groove between the top and second rings: this is to increase the air gap between the rings to better stabilize them at speed. The top of the piston has a PolyDyn synthetic polymer ceramic coating that can protect the piston from high heat soak, which can reduce the structural integrity of the part and keep the piston from burning the tops.



The coating also reflects heat back into the combustion chamber for a more complete burn of the mixture, allowing more power with less ignition timing. The piston skirts are coated with a material called PolyDyn RP, a high-pressure, dry film lubricant, unique in that oil gets it wet. This will protect both the piston skirt from galling and the cylinder walls from scuffing.



The rings are an essential part of power production, and Dick has found great success in running a Childs & Albert Dura-Moly Dykes-design top ring;



a ductile, taper-face, zero-gap (ZG) second ring (shown); and an oil control ring that is a low-tension design to minimize drag resistance.



The rods connecting the pistons to the cranks are forged small-block Chevy units from Oliver. They measure in at 6.2 inches in length, and weigh 660 grams. Pin diameter is .927 inch (small-block Chevy OEM diameter), and the big ends are finished in factory SBC 2-inch diameters. Like the crankshaft counterweights, the connecting rods are coated with PolyDyn PD-14 Silver, an oil-shedding coating that will not allow oil to stick to the parts. This reduces



All of the engine bearings are Clevite 77 parts--and more PolyDyn coatings can be found here, as well. This time, the material is PolyDyn DL--another dry film lubricant that oil sticks to. If there is a starvation problem, the coating is designed to keep the bearings from sticking to the journal. Oiling holes will be drilled to each specific main bearing after the trial assembly period. DMR likes to see .0030- to .0035-inch clearances on the main bearings and .0025-inch clearances on the rods.

parasitic drag on the rotating assembly, hopefully allowing the engine to rev quicker and smoother.



More oiling system information! The oil pump is an out-of-the-box unmodified Melling HV pump (PN M22FHV). Dick has used plenty of these pumps with no problems. The 7-quart oil pan and matching pickup are Moroso parts, but DMR prefers to sell the pan, pickup, and pump as a complete package under PN DMR 20482-5.



This way, enthusiasts get a complete set of matching components and take the guesswork out of engineering what may be the most critical portion of a performance Olds-- the oiling system!



The harmonic damper is from BHJ and is designed for internally balanced small-block Oldsmobiles. It carries PN OL-1B-7 and has timing marks machined in the proper locations.



As we mentioned earlier, the cylinder heads are Edelbrock's aluminum units for Oldsmobiles (PN 6051). As delivered, the heads feature 77cc chambers, 188cc intake ports, and 106cc raised-floor exhaust ports. After DMR is finished with them, they will have smaller 65-70cc chambers, and the ports will have been reworked to deliver 315 cfm on the intake side and 218 cfm on the exhausts. This is measured at 28 inches of water on the flowbench. Normally, Dick takes the time to port his own heads, but this time, he's calling in the artillery.



We're sworn to secrecy over who is doing the work, but we're confident Dick's heads are in very capable hands. Compression will end up at nearly 11:1. Isn't that too much for pump gas? Dick Miller explains: "With the extensive coating work and some other tricks I've got up my sleeve (like the cam design), I feel I can push this much compression without detonation on this particular engine." Time will tell.



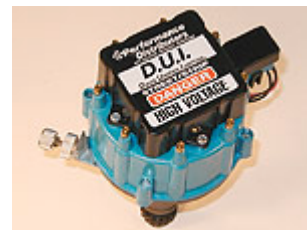
The intake manifold will be an Edelbrock Performer RPM Olds 350 (PN 7111). This will be modified along with the heads to create a matched performance package for power between 2,500-6,500 rpm.



The camshaft is the key to making the power come up when it needs to, and Dick is carefully researching his needs to



The intake will be topped by a Carb Shop-built Holley 750 or 850 (Miller will test both and send whichever carb he's most



Ignition duties will be handled by a Davis Unified Ignition (DUI) HEI unit from Performance Distributors. "They're good to

determine final cam dimensions. "The cam will be a solid flat-tappet design, with lots of lift and wide lobe separation. It will be from COMP, along with my lifters, pushrods, rockers, springs (125-pounds of seat pressure), retainers, and locks. I've tried many different camshafts, and the parts I get from COMP always measure out right and work wonderfully. I'm at a slight advantage, since they are located in Memphis, and I can go over there and work with them face-to-face. They're great people, and customer service is a big priority. They've helped me out plenty!"



We warned you about more unusual crankshaft info. The crank was drilled to accept a 425 Olds flexplate, and DMR is having custom 12-pound flywheels made by ATI to DMR specs for 330 cranks that have been swapped into 350 blocks. While all of this may sound like a headache, rest assured that DMR has already done the homework to make this easy. By using the DMR parts, you'll end up with a well-engineered, affordable package that will work great in street applications. By avoiding the need for a custom crank and using a combination of factory Olds, Chevy, and custom parts, the rotating assembly ends up being much less expensive in the long run. Building an Olds 350 will never be as easy as building a Chevy 350, but that's why they're so cool. A select few builders have really tapped into the power potential of the small-block Olds; luckily Dick is one of them.

satisfied with). "I've built lots of carbs over the years, and I really like working with the Carb Shop. They really listen to what you're saying, and they do what they say they'll do. That sounds simple, but if you don't get what you think you're getting, it can be very frustrating. The Carb Shop delivers."



Additional details regarding Miller's 365ci Engine Masters Challenge Olds include K&N filters, Hooker headers (PN 3107, with 1 3/4-inch primaries and 3-inch collectors), and Straightline Performance mufflers (PN 151300, 3-inch inlet and outlet). Dick Miller is one of two builders who signed up to enter Olds powerplants, and we're curious to see not only how this Olds does against the Chevy, Ford, and Mopar entrants, but also the other Olds! Dick told us, "We've got the ability to make parts recommendations, sell the right parts combinations, and work directly with our customers to design and build Oldsmobile engines to best suit their specific needs. This engine is typical of what we do here; every part has been carefully researched and modified to perform to as well as possible. If an Olds enthusiast wanted more performance, he should call me and I'd work with him personally. Hell, even if

9,000 rpm, and this motor will never see that. They custom-build every one, so I know I'll get what I need for this combination. The ignition curve will require fine-tuning, and the DUI guys are dialed in on what it takes to get exactly what you're after. They're also here in Memphis, so I can work directly with them on a local level." Who knew Memphis was such a hotbed for hot rodding?

they're restoring a rare
Oldsmobile, I can help them get
the correct parts they're after."
Thanks for information, Dick,
and we'll see how your extensive
research plays out against the
big dogs on dyno day!