



MOTOR KNOWLEDGE

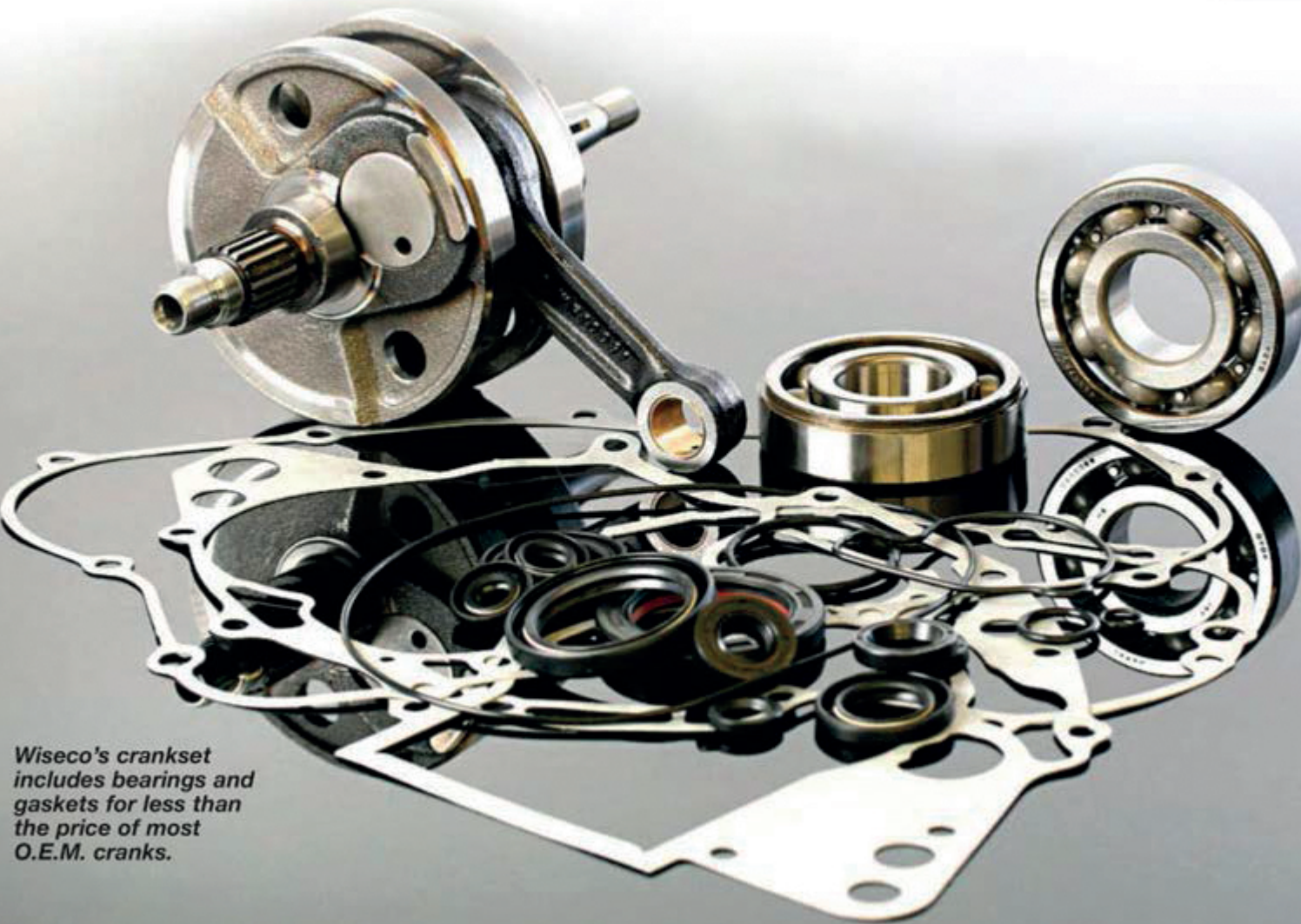
BEFORE YOU REBUILD...

Ten essential things to know to fix your motor for less

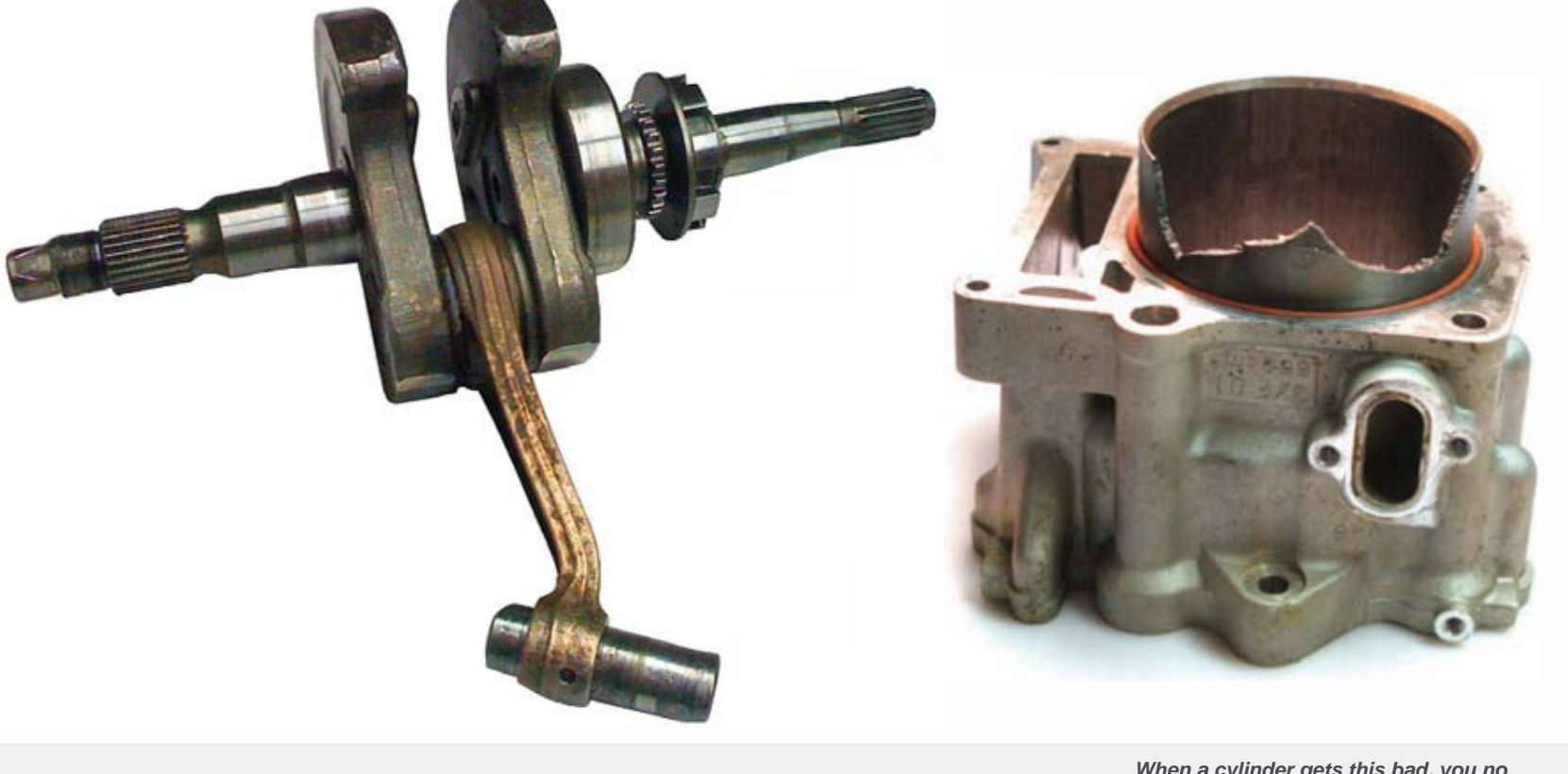
High-performance ATV motors are amazing. They make more power and weigh less than ever before. In the last seven years, there's been a complete revolution that took us from a fairly primitive sport filled with 1980s technology all the way to the leading edge of motor development. But there's been a price. A high-performance quad is no piece of farm equipment. It's now a high-tech piece of racing hardware that needs keen maintenance and attention. And when it blows, it can be expensive.

Here's the key to keeping a healthy heart in your ATV: Don't be afraid of it. Rebuilding your own motor at the appropriate time isn't so tough. Even if you don't want to do it yourself, there are some key things to know that will either delay that overhaul or make it a less painful and expensive experience. *(continued below)*

ATVs aren't powered by old-world motors anymore. Modern performance quads have motors that are sophisticated, light and powerful. They also require more maintenance than ever.



Wiseco's crankset includes bearings and gaskets for less than the price of most O.E.M. cranks.



Tod Sciacque (pronounced "Todd") drove his Yamaha Rhino until it wouldn't move anymore. That's too far. If he had stopped, say, one minute earlier and replaced the piston, it would have been a lot cheaper.

When a cylinder gets this bad, you no longer have the option of just replating it. L.A. Sleeve can install a whole new sleeve for less than the cost of a cylinder.

1. KNOW HOW TO PREVENT

Some motors go bad early. Those are the ones that come from bad homes and have unhappy upbringings. They rarely get their oil checked, much less replaced. Remember that a high-performance motor blows out some oil at high rpm—it's perfectly normal to lose a little on every ride. Keep a high-quality synthetic oil in the motor and keep it fresh. Don't use automotive motor oils; they aren't designed to deal with meshing gears, which can chew up the long molecules found in polymers. And don't forget that warm-up time. Most of the fragile parts in the top of the head will be dry when you hit the starter button.

2. KNOW WHEN IT'S TIME

There are lots of ways to know when it's time for a rebuild—the most common is when the motor stops running in a cloud of black smoke. The goal is to rebuild it before that happens. Keep an hour meter on your ATV. Dr.D ([951] 808-1114) sells a great one. Under hard use, you should think about replacing the piston in a sport ATV after 50 hours. Beyond that, you should also have a magnetic drain plug. It will collect a small amount of metal every time you look at it, but if there's suddenly something big, you might have trouble. Zip Ty Racing sells one. And then there are standard signs like hard starting and exhaust smoke. You can't use an old-fashioned compression gauge because of the automatic decompressors on most motors, but you can do a leakdown test if you have the right equipment.

3. KNOW WHOM TO TRUST

If you know your way around a modern four-stroke motor, good for you. It really isn't that hard with a proper service manual. But if a major overhaul intimidates you, there are a lot of people willing to do it for you. A dealer is the safest place to go, but they can be expensive. A self-employed mechanic should charge about 30 percent less than a real dealer and be happy to get that. Some garage mechanics are great—some aren't. It's all about getting references.

4. KNOW WHAT TO PAY

Dealerships generally get about \$80 to \$100 an hour. Home mechanics get around \$50 an hour. That's all fine, but how do you know how much time a job should take? Dealerships have "book" numbers for how long it *(continued below)*

Honda heads are so inexpensive it doesn't make sense to rebuild them unless you want the ultimate in performance. L.A. Sleeve will install copper beryllium seats and guides which are much better than stock. For Kawasaki and Suzuki heads, the rebuild process is cheaper than a new head.

If you can't salvage your old cylinder, check out Cylinder Works, which can sell a brand new cylinder for less money than the factories.



REBUILD...



Wiseco pistons are forged and much more durable than most original pistons. The coating on the skirt is still there after hours and hours of use.



Remember to replace that cam chain! For the \$20 price of a new Wiseco chain, you can save your motor from thousands of dollars of damage.



Rebuilding your crank is the least expensive route. Hot Rods sells rod kits that are less expensive than stock and L.A. Sleeve will put it all together.



Wosner is a German piston sold by Nik's Industries (1-888-500-NIKS) that provides good quality at a good price.



Webcam makes regrind cams which can save you big bucks. There is no difference in the durability of a modern regrind and a billet cam.

If your bike came with titanium valves, you can't use less expensive steel valves because the heavier valve might float at high rpm. To prevent this, you can install Nik's stiffer valve springs. The money you save by using steel valves might be eaten up by the additional cost of springs— but only on the first rebuild.

Cometic and Wiseco both sell gasket kits that are priced better than the O.E. stuff.

is expected to take for warranty work. You might have a friend at a dealership who can share those numbers. But, it's always best to get upfront pricing for an entire job. There are laws in all states governing the practices of both dealerships and home mechanics. You should know them and be sure to ask about "worst case" scenarios.

5. KNOW WHAT'S NECESSARY

Modern valves can last a long, long time, and you don't have to replace them nearly as often as your piston. You can check to see if your valves and seats are sealing properly by squirting cleaner into the valve ports and seeing if the valves leak. You probably don't need a new cylinder unless the old one has visible wear or damage. Your crank should only be replaced or rebuilt if it develops play. Gears are probably okay unless the motor is jumping out of gear. Modern cams seem to last a very long time.

6. KNOW ABOUT O.E. PARTS

Most dealerships will charge suggested retail for all parts. That can be very expensive. And if you go to a garage mechanic, he has to get parts from a dealer, and he will probably mark them up, which is a normal practice and not at all unethical. You can save money by knowing where to source your own parts. Internet and mail-order prices are usually much less than walk-in dealer prices.

7. KNOW ABOUT AFTERMARKET PARTS

In many cases, aftermarket parts are less expensive than O.E. parts. A Wiseco crank kit, for example, includes a Wiseco crank, plus bearings and seals for less than the price of an original equipment crank. The same is often true of pistons and cams. But there are some O.E. parts that aren't offered by aftermarket sources. Heads, for example, are so complicated to manufacture that only the original maker will produce them.

8. KNOW ABOUT REBUILT PARTS

There are times you should have your original crank, cylinder or head rebuilt, and there are times you should buy a whole new part. L.A. Sleeve will rebuild your original crank.

9. KNOW WHEN TO HOP UP

All that brings us to one of our favorite subjects: hop-ups! There's no better time to search for more power than rebuild time. If you want the very best, then by all means, rebuild the original head with copper beryllium valve seats. It makes perfect sense to wait until that old cylinder is worn out, and then replace it with a bigger one. High-compression pistons cost a little more than standard ones, but the labor cost is the same. And high-performance cams are often less expensive than the standard ones.

10. KNOW WHEN TO SELL

There's a lifespan for everything. An old quad motor can very easily cost more to fix than it's worth. If you think you're getting close to that point, then sell it cheap. Be honest. But if it runs, it's still worth more than otherwise. If it doesn't run, then parting it out is always the best option. Go to eBay and check out the prices that used chassis parts sell for. You'll be amazed.