



DRIVE LINE

News and Updates From Jasper Engines & Transmissions December 2006

In This Issue...

- Customer Profile:*
3 Man Auto Service **pg. 2**
- Chuck Lynch:*
Changes in Valve Seat Machining **pg. 3**
- We Have Our Calendar Winners for 2007! **pg. 4**
- Matt Boehm:*
Turbocharger Failures **pg. 5**
- Steve Wallace Wins Two More ARCA Events **pg. 6**
- 3Rs: Ryan, Racin' & Rain **pg. 7**

JASPER Unveils 'Authentic Custom Drivetrain' Program

Jasper Engines and Transmissions has launched a new remanufacturing program.

In addition to its current line, JASPER Authentic Custom Drivetrains will specialize in remanufacturing engines and transmissions that are currently no longer offered, or have been turned away in the past because they did not fit into a production remanufacturing system.

This division is located on the second-floor of the Jasper, Indiana, remanufacturing facility, and is separate from the company's first-floor engine division operations.

The goal of JASPER Authentic Custom Drivetrains is to cater to a customer base that is doing restoration projects, and is looking for something extra when they get their engine remanufactured.

"If you look at the popularity of television shows that highlight vehicle restoration, there's a huge market out there of people restoring the older model vehicle they have setting in their garage," says Alex Ernst, JASPER Authentic Group Leader. "One type of client that would benefit from our division, for instance, is the individual restoring a '69 Corvette that is wanting his or her serial numbers to match, and wants their engine to be hand-built by experienced professionals."

"With JASPER Authentic Custom Drivetrains, we spend extra time remanufacturing an engine," Ernst added. "We give the customer that hands-on, hand-built treatment that our targeted customer base is looking for."

In addition, JASPER Authentic Custom Drivetrains will provide some extras for the enthusiast. "Customers can opt to have their engine dynamometer tested in addition to the live-run test we perform," said Ernst. "And we are going to provide the customer with documentation of the remanufacturing process. With a login name and password, they will be able to go to our website and check the progress of their engine or transmission daily, and even view the dynamometer report if they have selected that option. They can print the information and archive it for their own records or use it to authenticate their unit as they show their vehicle."

At the present time, JASPER Authentic Custom Drivetrains is remanufacturing engines and transmissions, with plans to add differentials in the coming months.

For more information, call 800-827-7455 or visit www.jasperengines.com.


Be Car Care Aware™

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3 Man Auto Service

Our Customer Profile takes us to Columbia, South Carolina, where we find 3 Man Auto Service. A joint-venture of three long-time friends who in a few short years has become one of the top JASPER installers in their area.

Mark Mills, Tom Warth and Mike Mosser had a combined 55 years of experience at a local car dealership in South Carolina. The three friends decided they were tired of dealing with all the red tape, and took the opportunity to start their own business. "We wanted to have an impact on the whole job," said Mark, "from the customer, to the parts, to the service and back to the customer."

In August of 2004, the trio opened 3 Man Auto Service at 1215 Rosewood Drive in Columbia. Originally, the business started small with four service bays. Today, 3 Man Auto has eight service bays and 4,000 square feet of working space.

3 Man Auto is a full-service auto and truck repair facility, specializing in engines, transmissions, suspension and alignment. Each of the facility's five technicians are ASE Certified. The company utilizes technical bulletins, and pay's for their employees' participation in educational

seminars, to help them stay up to date with the latest automotive advances.

Because the three owners have been together for so many years, 3 Man Auto Service has become something like a tight little family, whether at work or play. It's been that long-term relationship that has allowed their business to be honest with each other, and their customers.

"Honesty" is also the motto used at 3 Man Auto Service. Tom Warth is very honest when he talks about JASPER remanufactured products. "We choose to use JASPER because we know that the quality is there, while other supplier's quality is not," says Tom. "We have confidence in the product."

"Warranty is a benefit, but I'm more interested in a product that I don't need a warranty for," Tom added. "JASPER has provided that." JASPER provides 3 Man Auto Service with an average of 25 engines, 20 transmissions and six diesel engines annually.

While only being in business for a couple of years, 3 Man Auto Service has experienced a great deal of success. Much of that success comes from having the confidence in what they are selling. "While working together with JASPER, it has helped us grow," says Tom. "We feel that it's a great partnership. Not only does JASPER provide a quality product, but they help us grow our business. More customers mean more opportunities for us." And with plans to eventually double the size of their business by 2008, there is plenty of opportunity for 3 Man Auto Service to reach their goal with the help of JASPER quality remanufactured products.



3 Man Auto Service is a great supporter of JASPER quality remanufactured products.

customer profile

Changes in Valve Seat Machining

by Chuck Lynch, JASPER Research & Development

Chuck Lynch

has been associated with JASPER since 1994. Lynch has been a member of the Research & Development department for the past nine years, and has been involved with Associate training in the Gas and Diesel departments. He has earned ASE Certification as an Auto and Truck Technician and a Master Machinist in Gas and Diesel Engines.



JASPER has adopted computer-controlled valve seat machining from Newen to greatly improve the quality of valve seats in today's remanufactured engines.

Over the years, valve seat machining has evolved from using vitrified abrasive wheels to grind seats, form cutters with multiple angles to machine profiles into seats and most recently single point machine generated seats. This latest concept, adopted by JASPER, utilizes a CNC (Computer Numerically Controlled) machine that is fitted with a single point cutting tool that generates a seat based on dimensional parameters that have been established and saved to the computer's memory.

These parameters give the tooling a road map to follow when generating the seat. With this technology, the seat can be as simple or as complex as you would like. Additional angles, radii,



The single-point cutting tool, coupled with the latest CNC technology, allows JASPER to cut simple, or complex, valve seats without the need for extra cutting blades or tools.

widths and so on can be changed with a few simple changes in programming. The machine has the capability of storing hundreds of profiles that are ready to go with just a couple of finger taps on the touch screen.

Timing is improved due to the fact that there are no additional cutters to buy and wait weeks for. If you don't like the results, simply change the parameters back. No tools wasted or pitched into a drawer to never be used again and we who machine seats know that we have some of those inserts.

We at JASPER have chosen to use CBN inserts. CBN (Cubic Boron Nitride) is a super alloy that is widely used in machining for milling, boring, turning, and the list goes on. By choosing this insert, coupled with the technology of fixed turning, even the toughest and hardest materials can be machined to exacting tolerances with relative ease. The above statements alone are nice... but the **real deal** is the **quality** of the seat that is generated. With single point tooling, the tool pressure is so greatly reduced that the

seat can be near **PERFECTLY ROUND** which in turn means a Perfect Combustion Seal. **Newen** states that these cutting pressures/efforts are reduced by 300 times. With proper clamping and pilot selection, a seat can be generated without the concern of chatter, ovality or inconsistent seat widths. It is hard to quantify the true importance of good seat geometry because it has bearing on so many factors and components. Worn valve guides, burned valves, excessive seat recession, power loss, and the list goes on....and on, if the valve and seat do not properly mate.

At JASPER, this technology was first used for generating seat profiles for the NEXTEL Cup Engines. The next logical target was the very close tolerance Asian engine segment. Now we are picking other platforms that can be difficult to machine. As demand for performance and our perception of quality increase so must our pursuit of technology.

We Have Our Calendar Winners for 2007!

The winning photographs have been selected to grace the pages of the 2007 Jasper Engines & Transmissions Calendar.

Every qualified entrant receives a 1/24th scale diecast #12 Dodge auto-graphed by Ryan Newman. All entrants whose work appears in the calendar receive a \$100 gift certificate which can be used to purchase JASPER remanufactured products or wearable items, 24 complimentary calendars and a special JASPER Gift Package.

Congratulations to all our winners!

Tim Devlin
Wichita, KS
1964 Cadillac Sedan DeVille

Don Leonard
Mt. Airy, MD
1957 Ford Fairlane 500

Keith Hays
Fort Worth, TX
1969 Cale Yarborough Mercury Cyclone

Justin Clapp
Whiting, NJ
1970 Ford Bronco

Foster Gillie
Oakville, WA
1973 Chevrolet Corvette

Don Hayes
DeSoto, MO
1964 Chevrolet Impala SS

Doug & Cindy Pierson
McPherson, KS
1956 Chevrolet Nomad

Bob & Lois Moore
McPherson, KS
1955 Chevrolet Bel-Air

Tim Krahling
Frederick, MD
1972 Chevrolet Nova

Garrick Sitzes
Union, MO
1951 Ford F-1 Truck

Rodney West
Mandeville, LA
1957 Ford Thunderbird

Walter S. Chrysler
Grand, MI
1955 Ford Fairlane Club Sedan

Randall Candler
Noblesville, IN
1965 Shelby Ford Mustang GT350 Fastback



1965 Shelby Ford Mustang GT350 Fastback owned by Randall Candler of Noblesville, Indiana.



1964 Chevrolet Impala SS owned by Don Hayes of DeSoto, Missouri.



1956 Chevrolet Nomad owned by Don & Cindy Pierson of McPherson, Kansas.



1973 Chevrolet Corvette owned by Foster Gillie of Oakville, Washington.



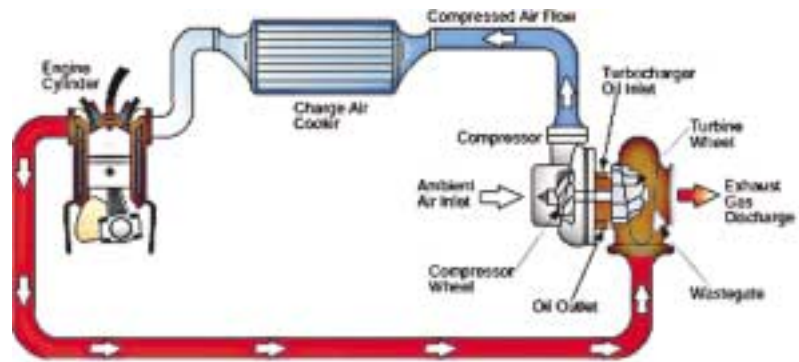
1957 Ford Thunderbird owned by Rodney West of Mandeville, Louisiana.

Turbocharger Failures

by Matt Boehm, JASPER Customer Service

Matt Boehm

has been an Associate with JASPER since 2002. Matt holds an Associate's Degree in Automotive Technology from Vincennes University, and a Bachelor's Degree in Industrial Automotive Technology from Indiana State University. He presently holds 22 ASE Certifications, including two Master Certifications.



This diagram shows how a turbocharger uses exhaust gases to force compressed air into the engine's intake manifold.

With the recent boom in turbo diesel powered Light Duty Pickup sales, the fact that an increasing amount of these vehicles will be coming in for service is inevitable. One of the most common problems seen on a modern light duty turbo diesel engine is turbocharger failure. Within this article we will discuss some of the more prominent failures, their causes and how to prevent them.

The air induction system on a late model turbo diesel usually consists of four main parts, the air induction tube or pipe, an air filter, the turbocharger, and a charge air cooler.

A turbocharger's main function is to use the normally wasted energy in the engine's exhaust gasses to drive the turbine wheel and shaft, which is attached to the compressor wheel. The compressor wheel, when rotating, provides an air charge to the intake of the engine provid-

ing enhanced engine power.

To provide the compressed air charge to the engine's intake manifold, the turbocharger wheels must spin at extremely high speeds, normally in excess of 100,000 RPM! With this in mind there are several factors that must be taken into consideration to ensure longer turbocharger life and performance:

Air filtration - The intake system of any internal combustion engine **MUST** be equipped with an adequate Intake Air Filtration Device. This factor is even more important on turbocharged engines. The turbocharger's bearings and vanes operate on extremely close tolerances, and must be kept free of any abrasive material. Any ingestion of abrasive material in a turbocharger's intake system can lead to costly turbocharger and even engine failure.

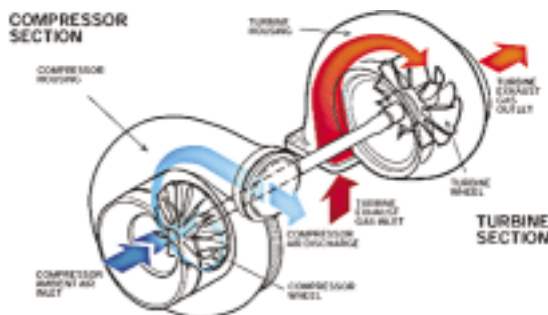
It is very important to keep the air filter clean on any engine; gasoline or diesel, turbocharged or normally aspirated. However, a restricted air filter on a turbodiesel engine can cause a drastic reduction in engine power, as well as excessive fuel consumption. A restriction can also cause excessive exhaust gas temperatures as well. In addition, a restricted air intake or filter can also cause excessive lube oil consumption due to oil being drawn into the compressor side of the turbo and into the engine.

Adequate Lubrication - Due to the extreme load and heat turbocharger bearings are subjected to, proper lubrication is essential. Abrasive material and contaminants in the engine lube oil act like a cutting tool on the turbocharger bearings which may cause premature failure. Failure of the turbo's bearings can allow the turbocharger wheels to contact the housing causing catastrophic turbocharger failure and possibly severe engine damage.

A turbocharger is much more sensitive to an inadequate oil supply than the engine itself. Insufficient oil pressure resulting from overheating, diluted or improper grade of lube oil, oil lag, or hot shutdown can all lead to shortened unit service life.

Proper Operating Conditions - One of the most accurate indicators of how a diesel engine is running is the engine's Exhaust Gas Temperature or EGT. Unlike a gasoline engine, which must operate at stoichiometric air/fuel mixtures to obtain maximum power, a diesel engine will continue to make increased power when more fuel is added. This advantage comes at the expense of potential turbocharger and possibly engine damage.

A properly running diesel engine under load will exhibit 900°-1000°F Exhaust Gas Temperatures. While temperature spikes of up to 1250°F may be



A typical turbocharger is divided into two sections: a compressor section and a turbine section.

(continued on page 7)

Wallace Fast in ARCA at Chicagoland

Steve Wallace joined the elite company of Frank Kimmel and Ken Schrader as the only repeat winners in the 2006 ARCA RE/MAX Series season with his victory in the SK Hand Tools 200 at Chicagoland Speedway.

Wallace crossed the finish line in his Penske-Jasper powered #61 Dodge nearly six seconds ahead of runner-up finisher Blake Bjorklund to win his second ARCA RE/MAX Series race of 2006, and the third of his career.

In addition to his victory, Wallace posted the quickest speed during practice, and earned the pole position with a time of 30.489 seconds (177.113 mph) around the 1.5-mile speedway. During the race, he also earned the fastest lap of the race award with a speed of 171.527 mph (31.482 seconds).

“Our mile-and-a-half cars just really fly,” said Wallace. “Of course, we’ve got some Penske-Jasper horsepower under the hood too, so that really helps. I think



Check the oil too, please: Steve Wallace receives service from his pit crew enroute to victory in the ARCA RE/MAX SK Hand Tools 200 at Chicagoland Speedway.

at one point we had a 15 or 20 second lead, so that was really fun. I’ve got two more ARCA races on the schedule, including Talladega and Iowa, in addition to some NASCAR Busch Series races, so we’re going to be really busy for sure.”

However dominate Wallace was, he

did not go without a few close calls. He finished the race with damage to the right side door after he was clipped by a car on lap 95 of the 134 lap race. Wallace was able to correct the car without spinning, and went on to claim the victory.

Wallace Wins Again with ARCA at Iowa

Steve Wallace recovered from an early race close call and withstood late race pressure from Kraig Kinser to win the inaugural Prairie Meadows 250 ARCA RE/MAX Series race October 15th at the newly constructed Iowa Speedway.

“They went from five to go, to four to go and Kinser kept getting closer and closer,” Wallace said of the closing laps. “I was expecting to get the old bump and run but he didn’t do that. Overall, it was a pretty good day for us.”



On the low side: Steve Wallace (#61) moves under Bobby Santos during the Prairie Meadows 250 ARCA RE/MAX event at Iowa Speedway. Wallace led the final 169 laps to win the race.

The 19-year old driver led 177 of the 250 laps, including the final 169, in his JASPER Powered #61 Dodge enroute to his 3rd victory of 2006. Kinser, making his first ARCA RE/MAX Series appearance since 2005, crossed the checkers .208 seconds behind to settle for second.

“The track felt great,” said Kinser. “I thought the race speed would slow down but I was running laps faster than my qualifying time. Steve was good all day so I knew he would be tough to beat.”

Wallace, whose father Rusty designed the new 7/8-mile track, escaped a very close call during the opening laps when he was battling for position with Juan Pablo Montoya. Wallace took the high line and made contact with Montoya, who glided up the track from the low groove, causing the two cars to make contact. Montoya went for a spin but was able to return to the track to post a 24th place finish, 42 laps down.

“I had a run on the outside of him,” said Wallace. “You know the rule is if your fenders are past the quarter panels, it’s your line. But I would say it was probably 50/50... half his fault, half mine.”

In addition to the win, Wallace earned the pole with an average speed of 137.357 mph (22.933 seconds). This allowed him to clinch the ARCA RE/MAX Series Pork Pole Award title for 2006 for earning the most poles for the season with four.

3R's: Ryan, Racin' and Rain!

Penske-Jasper driver Ryan Newman appeared at O'Reilly Raceway Park in Indianapolis to race in the Premier Racing Association's Jasper Engines & Transmissions Circle City 100. Rain, however, was the winner at the .686 mile oval September 12th, and forced the event's cancellation after 26 laps.

The rain held off long enough for Newman to qualify the #69 Hoffman Racing BEAST chassis with MOPAR power 10th in the 25-car field. He quickly worked his way up to sixth before a steady rain began falling on lap 18 of the feature event, and the race was red-flagged after 26 circuits. Knowing the track would take at least 90 minutes to dry, and with more rain on the radar, PRA officials decided to cancel the event.

The PRA Big Car Series was formed in 2006 for the former Silver Crown pavement cars that were "parked" due to a change in the United States Auto Club's car design rules that went into effect earlier this year.



On The Gas: Ryan Newman puts the #69 Hoffman Racing entry through its paces during practice for the Jasper Engines & Transmissions Circle City 100 at ORP.

JASPER Makes Available More Late-Model Ford & GM Engines

Jasper Engines and Transmissions, the nation's leader in remanufactured drive train components, has made available two more GM engines, and one Ford engine, for late model applications.

These new GM offerings are the 2.2L ECOTEC 4-cylinder and the 2.8L 4-cylinder gas engines.

The 2.2L ECOTEC 4-cylinder is available for the following applications:

- * 2002-2005 Chevrolet Cavalier, Pontiac Sunfire and Pontiac Grand Am
- * 2002-2004 Oldsmobile Alero
- * 2005-2006 Chevrolet Cobalt, Malibu and HHR
- * 2002-2006 Saturn Ion and Vue
- * 2002-2004 Saturn L Series

Flex Fuel applications of this engine are also available.

The 2.8L 4-cylinder engine is available for the following applications:

- * 2004-2006 Chevrolet Colorado and GMC Canyon Pickups

JASPER's latest offering from Ford is the 2.3L 4-cylinder engine available for the following applications:

- * 2004-2006 Ford Ranger pickup
- * 2004-2006 Mazda B2300 pickup

Each of these remanufactured engines carries JASPER's 36-month, 75-thousand mile nationwide warranty.

Log onto www.jasperengines.com, or call 1-800-827-7455 for more information on these and other products from JASPER.

GM 2.8L 4-cylinder engine



GM 2.2L 4-cylinder ECOTEC engine

Ford 2.3L 4-cylinder engine



(continued from page 5)

seen under heavy load and hard acceleration, it is when these extreme temperatures are sustained for an excessive amount of time that problems occur. The exhaust gas that drives the turbine can start to erode the edges of the turbine's vanes. When these vanes erode, the turbo is subjected to an imbalance condition, which can destroy the bearings, or even cause the turbine wheel to burst, sending the fragments throughout an extremely expensive engine.

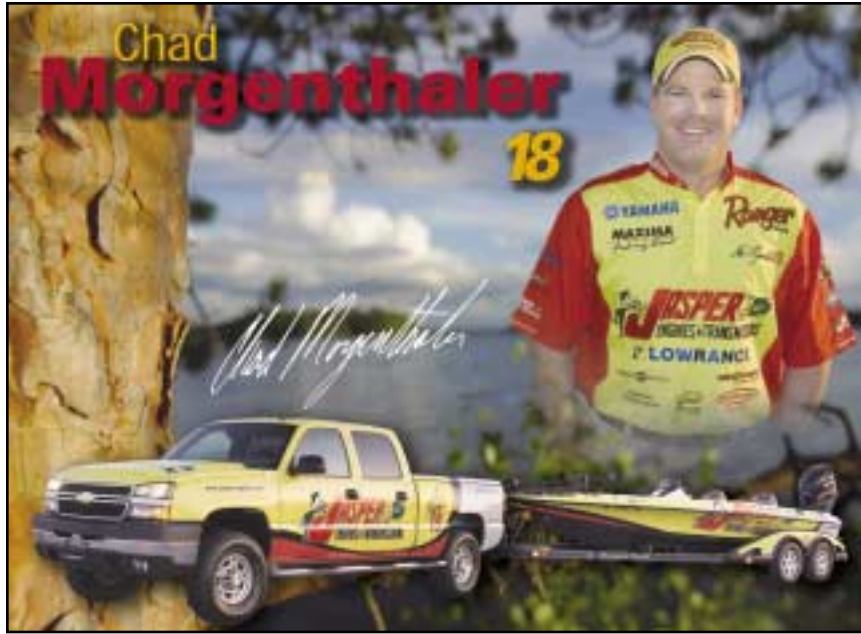
Sustained excessively high EGTs can also cause the turbine housing to crack or distort which can allow the turbine wheel to contact the housing and burst.

Excessive Exhaust Gas Temperatures can be caused by a dirty or restricted air filter, charge air cooler, intake tube, restricted exhaust, improper fuel calibration or the addition of an aftermarket power adding device.

In summary, there are several factors that affect proper turbocharger operation. Most turbo assembly failures are the result of improper maintenance or other outside factors. These factors can for the most part be eliminated by routine maintenance of the engine itself and periodic inspection of the engine's intake and exhaust system for proper operation.

Using Crank Baits Year-Round

by Chad Morgenthaler, JASPER Fishing Team



I love to use crank baits for bass year round. Here is a trick you can try... Always use a light wire hook.

Hooks that are extremely light will penetrate with the slightest amount of pressure. When possible, rotate the hooks with a pair of pliers about 30 degrees (all in the same direction). This exposes the super-sharp point and will help catch those fish that swat or swing on the bait rather than inhale it.



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