

News & Updates

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JASPER Dedicates Willow Springs, Missouri, Facility

Doug Bawel, President of Jasper Engines & Transmissions said, "It's official. We have formally opened our Willow Springs, Missouri, plant on July 6th, complete with a special 20' x 38' flag, some 100 guests and 25 Quality Remanufactured Engines rolling off the production line.

Brad Bawel, Project Manager, added, "We are pleased to announce our production of 25 quality 350 Chevrolets today. It did take until 8:45 p.m., but we said we would not quit until we produced and successfully tested 25 units and we did. A special thanks goes out to Assembly, Testing, Packaging and Parts, along with a big thanks to the JASPER Quality Crew for hanging in there to reach our goal."

Mike Schwenk, Vice President of Manufacturing, stated during the opening ceremony, "It is truly remarkable to think that just six weeks ago we had no idea where

Willow Springs was and in less than 30 days we took possession, did a total makeover and are up and running. We can't thank the Associates of Willow Springs enough for their perseverance in reaching their target opening of July 6th and attaining their first day production goal of 25 engines. Awesome job one and all."

Until JASPER's acquisition, the Willow Springs facility, located approximately 60 miles east of Springfield, had been closed since December of 2003. JASPER's goal is to produce 50 gas engines a day and quickly migrate into producing transmissions.

"Due to the great support and sales success of JASPER's many installers that sell our products, the demand for our products is at an all-time high. The opportunity to develop the

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The 20' x 38' flag is formally raised during the dedication ceremonies of JASPER's newly opened Willow Springs, Missouri, facility.

Strite's Garage

Located not far from the Maryland state line, Strite's Garage of Waynesboro, Pennsylvania, is a JASPER Preferred Installer, and full-service diagnosis and repair facility.

The owner, Harold Strite, had seven years of experience in the automotive field before he started his own shop. During that time, Harold learned every aspect of auto repair, from electrical and brakes, to carburetor adjustment and front-end alignments.

Harold started Strite's Garage on January 1st, 1975 at 9119 Stottlemeyer Road. The business remains at its original location to this day, it's just increased in size over the years. Strite's Garage started with four working service bays. The shop doubled in size when four additional bays were added in 1986. Four more service bays were added in 1992 to give the facility over 8,500 square feet of working space.

Nine associates are employed at Strite's Garage, including six technicians. Three of Harold's technicians are ASE-Certified, including one ASE Master Technician. Strite's Garage pays for all of its technicians education to keep up with the latest automotive advance-

ments. Sometimes, the shop will even host a technical clinic.

Strite's Garage utilizes state-of-the-art equipment for the most modern of vehicles. "We have the equipment to diagnose and reprogram GM and Ford vehicles," says Harold Strite, "And we can rebuild fuel injectors."

Harold Strite has purchased JASPER quality remanufactured products for the past six years, and currently averages \$40,000 in annual sales. "JASPER has a good quality product, and they back their product with their nationwide warranty," says Harold. "My shop has tried all the remanufacturing companies in the past, and nothing holds a candle to JASPER."

At some point in the future, both of Harold's sons will take over the business. But not before plans are in place to add 10 more service bays. And with a new thoroughfare planned, Strite's Garage wants to turn the back side of the present building into a new front entrance. There's also plans to start mid-range diesel work as well.

It's been a team effort at Strite's Garage to grow a fledgling business into a success over time by striving to be the best; not the cheapest.



Strite's Garage in Waynesboro, Pennsylvania, has been at the same location since its opening on January 1st, 1975.

MLS: A Simple Solution for A Complex Problem

by Lee Palmquist, Senior Product Engineer, Federal-Mogul Corporation

Lee Palmquist

has been with Federal-Mogul for the past 34 years. Lee designs gaskets at the Aftermarket Engineering facility in Skokie, Illinois, and tests his designs on dynamometer engines and field test vehicles. Lee provides technical assistance to customers and technical writers.

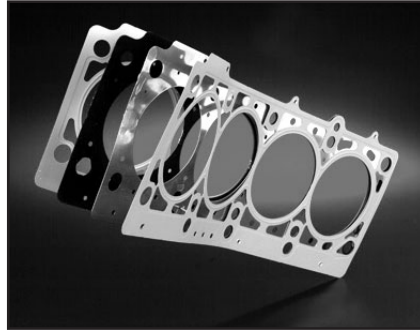
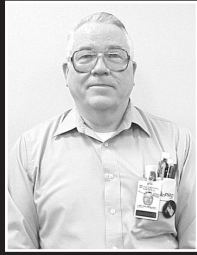


Figure 1 - Individual layers of an MLS head gasket.

MLS head gaskets, depending on your experience, could be the greatest thing since sliced bread, or the devil incarnate.

Traditional OE type MLS gaskets are constructed of a minimum of two layers of tempered stainless steel with at least one being an active layer. The active layer is the component having the embossment that is functioning to maintain a certain amount of sealing stress against the casting flanges. The number of active layers present in the individual gasket is an indication of the amount of motion that exists between the components when the engine is running.

Note the picture of the individual MLS layers (*Figure 1*) showing the two outside active layers, a silver stopper layer having a foldover at the combustion openings to enhance the combustion seal, and a black shim layer that adjusts for the final compressed thickness of the assembly.

Under normal conditions of head gasket to cylinder head/engine block function, a conventional composite head gasket, using a steel core with expanded graphite or treated paper-type facing, can accommodate approximately .0005" of vertical motion. This is the normal motion that exists in all internal combustion engines whereby the combustion

pressure in the cylinder tries to lift the cylinder head off of the engine block with each firing. This motion varies among engines and was kept below .0005" lift for many years.

With pressure on the auto companies to improve engine efficiencies, cylinder firing pressures have been increased, engine castings have been lightened and aluminum has taken on an important role in this matter. As a result, more head lift beyond the .0005" has occurred along with the tendency towards increased casting distortions. These conditions render the standard composite head gasket designs marginal to non-functional if applied to these applications.

The active layer in an MLS design can accommodate approximately .0003" of vertical motion. By applying two active layers to an application we are already able to accommodate .0006" of vertical motion, three layers .0009", and so on.

The active MLS layer can achieve this accommodation because the steel used is full hard tempered and contains various embossment shapes

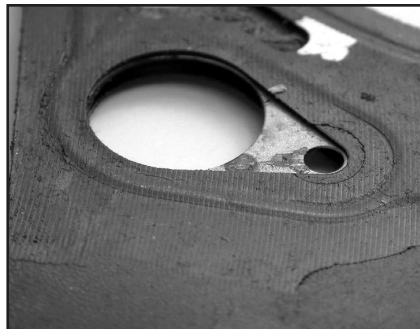


Figure 2 - This gasket is too rough to seal effectively.

and contours to seal combustion as well as coolant and oil. Embossments at non-fluid locations are designed to support the engine castings to reduce head bending and distortion. Also, the fact that adequate sealing stress is achieved at lower bolt load reduces the amount of bore distortion in the engine block.

Sealing combustion and engine fluids with steel embossments is always sensitive to surface finish. They don't easily conform to surface irregularities, so a very thin, fairly hard, rubber coating and an incredibly smooth casting surface finish are required to provide a satisfactory seal. When the castings are new and the finish is fresh, most MLS gaskets work quite well, but when the castings are used, or if they are remachined with less than a perfect finish, leaks usually result.

Regardless of the brand of MLS gasket chosen, for the gasket to seal properly, the finish on the head and block must be flatter and smoother than what has traditionally been required for composition gaskets. Most MLS gaskets require a surface smoother than 180Rz (*see Editor's Note on Page 5*).

Resurfacing a head or block doesn't necessarily guarantee flatness or the proper surface finish. Newer resurfacing equipment has the capability to produce very smooth, flat surfaces, that are well within the required roughness specs. Older, or improperly maintained equipment often leaves a less than desirable surface finish, and will often result in leakage. It is therefore extremely important to measure the roughness of the texture produced by a particular resurfacing machine to make sure it is within specifications.

Note the picture of the surface impression on the top layer of the MLS gasket that is too rough to seal

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Rear Axle Backlash vs. Rear Axle Overall Movement

by Wayne Mehringer - JASPER Differential Production Manager & Mike Hall - JASPER Transmission Quality Control

Wayne Mehringer

has 29 years of service with Jasper Engines & Transmissions. Wayne started his career in Diesel Teardown, and later helped start the Sterndrive Department. He is currently the Production Coach and Manager of the Differential Division. Wayne is ASE-Certified as a Medium/Heavy Truck Technician, and in Automobile Specialty Areas.



Occasionally, someone will say that they know their differential gear backlash is too high because they can rotate the driveshaft, or input yoke/flange, what appears to be an excessive amount. They may be right about having too much movement, but what they are actually measuring is what we call “overall driveline movement,” which we will discuss later. However, there is only one way to accurately measure pinion-to-ring gear backlash, and this is not the proper way to do it.

Do not be confused with overall driveline movement thinking this is backlash! The true meaning of backlash is the movement between the pinion gear and the ring gear only. On



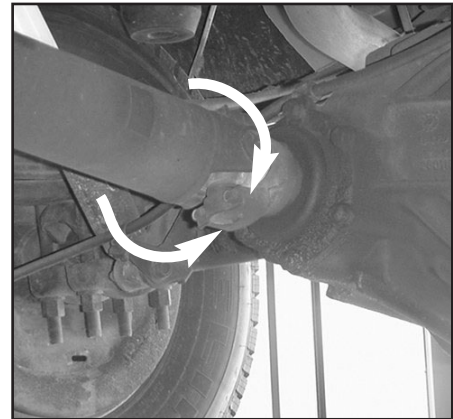
This is the proper way to measure pinion-to-ring-gear backlash.

most normal applications, JASPER’s reading will be in the range of .005” to .012”, depending on the application. The way this should be measured is by disconnecting the drive shaft and removing both axle shafts. Then place a dial indicator on one tooth of the ring gear, preferably on the pull side of the tooth as close as possible to the heel side of the gear.

Rotate the ring gear back and forth without moving the pinion gear. The reading shown on the dial indicator is called the “backlash”.

One of the differences between backlash and overall driveline movement is that the overall movement is measured with nothing disconnected. Also, when checking the overall movement, the pinion gear is not held stationary. Therefore, this measurement is based on the movement and wear of many different parts. If a person was measuring overall driveline movement, this would be done with the vehicle on the ground and in neutral. Be sure that the wheels are chocked to prevent the vehicle from rolling. We would then rotate the driveshaft back and forth until the driveshaft stops. This would be the “overall driveline movement”.

The wear on yoke and pinion splines, bearings, spider shaft, spider shaft holes in the differential case, side pinion gear hole I.D., side pinion and side gear teeth, side gear and axle shaft splines, along with the backlash, all have an effect on the overall driveline movement. If all of these components were tight together with no clearances between any of them, technically, there would be no overall movement. However, there needs to be clearance between many of these parts, including ring and pinion gears, to function properly. Excessive wear on any of these parts will naturally cause the driveline movement to increase proportionately. Can high backlash cause the



Rotate input shaft back and forth from stop to stop to check overall driveline movement.

overall movement to go up? Of course, but you cannot tell if the backlash is high until it is checked properly.

Checking “overall driveline movement” may be an indicator that there is a problem, but to find the root cause of anything, the proper checks must be performed. Before jumping to conclusions, please remember to check as many of the possibilities as you can. You do not want the repair to be any more complicated than it has to be.

Mike Hall

has been with JASPER for 16 years; 13 were spent in the Differential and Stern drive Departments. Mike



has spent the past three years in Quality Control as a Transmission Auditor. He is ASE-Certified in Manual and Medium/Heavy Truck Drivetrains and Axles, Automatic Transmissions/Transaxles, Engine Repair, Brakes, Suspension & Steering, Heating & Air Conditioning and Electrical/Electronic Systems.

(Continued from Page 1)

Willow Springs remanufacturing facility is definitely a WIN-WIN for our many loyal customers and the community,” commented Tom Schrader, Vice President of Marketing and Strategic Development.

Over the last several years, Jasper Engines & Transmissions has aggressively added new branch offices in the United States and today is coast to coast with 34 branch and distribution facilities. “Although the last several years have been quite tough for all,” says Schrader, “we have worked very hard to continue our tradition of 62 years with NO LAYOFFS. We are proud of our people and our customers.”

With the increased sales comes the need for increased production,

which the Willow Springs facility will help fill.

Gervase Schwenk, Chairman, said it so well, “JASPER makes calculated decisions that are positive for the bottom line and I feel the same about Willow Springs.” Mark Wallace, JASPER’s largest distributor, was on hand and commented, “Quality is what JASPER is all about. JASPER has experienced tough times like all companies, but the quality of their products and people keep customers coming back. I am proud to be a part of this tradition.”

President Bawel concluded the ceremony thanking the people of Willow Springs, the Associates of Willow Springs, and Facility and Maintenance crews from JASPER. He extended a special thanks to Project Manager, Brad Bawel, and



Left to right: JASPER Chairman of the Board Gervase Schwenk, Assembler Bruce Roberts, and Project Manager Brad Bawel stand with the first engine produced in the new Willow Springs facility.

Construction Manager, Charlie Eckert, for making this happen. “Unbelievable,” he said. “Now we have got to get up to our next goal of 50 engines a day and 50 transmissions a day over the next four months,” concluded Bawel.

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effectively (Figure 2). This condition created an immediate oil leak that prevented the vehicle from leaving the shop.

Surface finish roughness is measured in microinches (millionths of an inch) either by the “Ra” method (average of peaks and valleys), or “Rz” (height distance from peak to valley). The only way to accurately measure the finish is to use a special instrument called a surface profilometer (Figure 3). This hand held electronic instrument (which can cost from \$1200 to \$4000 or more) drags a diamond tipped stylus across the surface to measure and calculate its surface texture.

Two other surface finish conditions that need to be examined are waviness and flatness. Waviness

describes the undulations or waves across the surface of the metal which are usually associated with milling machines. A waviness height of up to .0004” is okay, provided the distance from peak to valley is no less than .030”. It’s also important that there be no sudden irregularities in the surface that exceed .001”. The flatness of both the head and block should always be checked with a straight edge before installing a new head gasket. Place the straight edge on the face of the cylinder head or block and then use a feeler gauge to check any gaps between the straight edge and the surface.

If the clearance between the straight edge and surface exceeds the maximum limits listed below, the head or block is not flat enough to hold a good seal and should be resurfaced or replaced:

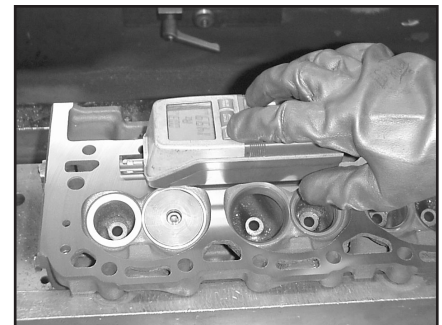


Figure 3 - A profilometer is used to measure and calculate the surface texture of blocks and cylinder heads.

Editor’s Note: JASPER requires a surface finish of 50 - 150Rz on both engine blocks and cylinder heads that will utilize MLS gaskets in final assembly. JASPER requires a surface finish of 100 - 300Rz for block and head combinations that will utilize composition gaskets. This ensures a proper mating surface for today’s modern gasket materials, as well as today’s aluminum and cast iron block-head combinations.

Maximum Out of Flat (total of head and block combined)

Engine Configuration	Length	Width
3 cylinder & V6 engines	.003 in	.002 in
4 cylinder & V8 engines	.004 in	.002 in
Straight 6 cylinder engines	.006 in	.002 in





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