

Under The Bonnet

Newsletter of the

**Wasatch Mountain Jaguar
Register**

December 2014



WMJR Web Site:

www.WMJR.org

WMJR News Group: <https://groups.google.com/forum/#!forum/wmjr>

Annual WMJR Christmas Party 6:30pm Tuesday December 2 at Spice Bistro

The WMJR Christmas Party tradition will be renewed this year at a new venue: Spice Bistro, 6121 S. Highland Drive in Holladay (phone 801-930-9855, web site www.spicebistroutah.com).

Last year we had a great time at an Italian restaurant, but the table service for our large group tended to slow things down. So, this year we're opting for two changes: a buffet format, and a different international cuisine: Indian.

We realize that some folks love Indian food so much they could eat it every day — in fact, rumor has it that approximately one billion people do this at home on the Subcontinent—while others can be leery of its, well, lively taste.

Rest assured that the buffet will contain mild dishes mostly, with a few spicy curries and plenty of hot sauces for optional garnishing.



And once again we'll uphold the tradition of exchanging gifts of modest luxury (e.g. \$10, or 6.25 UK pounds). These can be earmarked for guys or gals or both (do we have any of those?).

Gifts with a Jaguar connection are always prized, but any nifty item will be appreciated.

Note the date was changed to one day earlier than originally announced, due to conflict with an athletic event at the U. Dinner cost will be \$35.58 each including tax and gratuity, not including any bar items.

The restaurant has asked for one group bill to be paid, which the club will do, so please bring a check payable to WMJR for your share.

'twill be a great way to kick off the holiday season — we hope to see you there. And don't forget to bring your 2015 WMJR/JCNA dues — still a bargain at only \$50.

Tour of Hulse Car Collection And Dinner At Cliff House

Jim and Hermione Klekas kindly arranged a tour on November 11 of Jim and Kathy Hulse's car collection in Draper followed by dinner at the Cliff House gastro pub.

The Hulse collection includes: a 1967 Jaguar XKE FHC, a 1960 Corvette Dual Quad, a 1963 Corvette Split Window Coupe, a 1969 Corvette T-Top, a 1989 Corvette Convertible, a 1986 Ferrari 328 Spider, a 2002 Ferrari 360 Spider, a 1992 Mercedes 500SL, a 2004 Mercedes S500, and last but not least (all under one roof!) a 2011 Camaro SS.

Also on display were the Klekas' 2008 Lamborghini Gallardo and Bill Breedlove's 1991 Nissan 300ZX twin turbo. Bill's car



was custom built for Thurl Bailey when he was playing for the Jazz, and has a 444 HP engine as modified by Bill. It was converted to a roadster by the famed R. Straman Coachworks of Costa Me-

sa, CA.

Attending were Bud and Betty Merritt, Marvin and Connie May and Connie's sister, Barbara McQuaid (original owner of their Jaguar), Jerry Gill and Denise Cummins, hosts Jim and Kathy Hulse, organizers Jim and Hermione Klekas, Jeff Klekas and Kathy Hawks, Bill Breedlove and Pam Manka, plus Your Obedient Scribe, Gary Lindstrom.





Would you buy a used crankshaft from this gal?

The Queen at the official opening of the new Jaguar
Land Rover engine plant

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Repairing Jaguar Clocks

—by Michael Eck

My involvement with Jaguar clocks began when I was finishing the restoration of my 1962 3.8 Mk 2. I was assembling the instrument panel and discovered that the clock didn't work. I took the clock apart, cleaned it, connected it to a battery and it started ticking. Unfortunately, three minutes later it stopped. No problem, I thought, I have plenty of spare clocks that came from various parts cars. I took another one and gave it the same treatment, but it wouldn't stay running either. So I took a closer look at the clock to see what the problem was. Since I design electronic circuits for a living, I soon realized that I could improve these clocks with electronic technology that wasn't available when these clocks were first designed.

Here's what I learned about how the clock works: In most clocks, the balance wheel is driven by a big spring which turns the hands. The balance wheel is used as a governor to keep the spring unwinding at a very slow rate. However, these Smiths clocks don't have a mainspring. In these clocks the balance wheel is a little electric motor that drives the hands. The balance wheel is made of brass, but it has magnetic steel pole pieces attached to it. Next to it there is an electromagnet that can attract these pole pieces, causing the balance wheel to turn one way or the other. There's a tiny electrical contact on the wheel

that allows current to flow when the balance wheel reaches a certain position. This current momentarily energizes the electromagnet, which gives the balance wheel a little pull in the proper direction. When the balance wheel returns, the electromagnet is again energized by the contact,



which gives the balance wheel a little pull in the other direction. This back-and-forth motion is then geared down to turn the clock hands.

Unfortunately, the current for the coil passes directly through the contacts, which close and open 5 times per second. This current produces a spark which is clearly visible. At the rate of 5 ticks per second, this spark occurs 18,000 times per hour, 432,000 times a day, and 157,680,000 times per year! It's no wonder these clocks fail so quickly.

My idea was to use the contacts simply as a trigger for an integrated circuit. The integrated circuit would then actually provide

the power pulse to the coil. Because of that, the contacts would only need to pass less than 1/300th of the current that they normally handle. In addition, the output pulse to the coil could be of a constant duration, which would give the balance wheel a solid kick no matter how bouncy or dirty the contacts were. The same idea is used in dwell-extender electronic ignitions.

When I built the circuit to test my idea it worked perfectly. I attached it to each of my spare clocks and they all started running strongly and consistently. There was only one problem: the circuit I built took up more room than the clock itself. It didn't seem practical to have a big external box with 5 wires leading through the back of the clock case, so I made a custom printed circuit Board that uses surface mount techniques to shrink the circuit down to the size where it will fit inside the clock. This picture shows the custom circuit board which is visible with the electromagnet removed.

I mentioned my design to members of my local JCNA club and also to Internet friends that I had met through www.jag-lovers.org. Not surprisingly, there were many other people who were just as frustrated as I was at not having a functioning clock in an otherwise beautiful Jaguar. For ex-

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Repairing Jaguar Clocks — *cont'd from p. 4*

ample, one of my friends told me that he had recently taken his flat-floor E-type out to buy some milk. When he came out of the store he found a man enthusiastically admiring his Jag, so my friend invited him to sit inside the car. The man took one look around the interior and said, "Too bad the clock doesn't work!" That's when my friend brought his clock to me for upgrading. A week later he went out cruising the 7-11 parking lot, hoping to show the man his working clock!

The news of my design has spread through word-of-mouth and over the Internet. Since I do these repairs mostly as a hobby and don't advertise I can keep my prices low. In the past two years I have up-

graded over 150 clocks, from as far away as Germany, Italy, Australia and Switzerland. Yes, even the Swiss are sending me clocks to repair!

What do I do to these clocks to make them work? First I disassemble them and ultrasonically clean the clock, then lubricate the bearing points with clock oil. I carefully clean and adjust the contacts, and coat them with a thin film of Deoxit D100L contact cleaner and rejuvenator. Then I install my circuit board under the coil. None of the original clock parts are removed, so the installation is totally reversible, in case you ever want a non-functional clock again!

Then I re-assemble the clock and connect it to my calibrator. The calibrator is a microcontroller-based device that I built which counts the number of ten-millionths of a second in a single tick. Using the calibrator I can determine in seconds whether the clock is running fast or slow, and adjust it accordingly. To fine-tune the adjustment, the calibrator also keeps a running total of 10, 100, 1000, 10,000 and 100,000 ticks. This provides an average over time which allows me to adjust the clock so it will perform accurately in the car. However, since it still uses balance wheel technology, it will never be as accurate as a crystal-controlled digital wrist watch. But if we wanted modern technology we wouldn't be driv-

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Repairing Jaguar Clocks — *cont'd from p. 5*

ing classic cars!

Because of my success with the early tachometer-mounted clocks, Jaguar owners soon started sending me their later clocks for repair. The Smiths 2-1/2" instrument panel clock, introduced in 1968, is a vast improvement in design over the early clock. It has no electrical contacts to wear out and the gears are all made of nylon, which doesn't require lubrication. Unfortunately, the electrical circuit inside the clock is prone to burn out. Clocks that were made during 1968-69 required a separate battery which was mounted on the back. This mercury cell is no longer available and equivalent replacements are expensive and

hard to find. The balance wheel on these clocks is a fragile spidery assembly which is composed mostly of electrical wire and glue. It is suspended between two powerful magnets which themselves are simply glued in place. Sometimes the glue lets go and the magnets smash together, destroying the balance wheel. Other times the balance wheel simply falls apart by itself. Unlike the earlier clocks, these clocks were never intended to be repaired, so they are crimped, swaged and riveted together. If something goes wrong with the mechanism there's nothing that can be done to repair it, so, it needs to be replaced with a new movement.

Luckily, I can install a new crystal-controlled motor which fits inside the original case and uses the original face, hands and time adjustment stem. It can either be powered from the vehicle's 12 volt battery or use a standard AA cell, depending on the customer's wishes.


However, if the original mechanism is still good but the electrical circuit has failed I can repair the electronics. I replace the original circuit with a more robust design that is protected from voltage spikes and reverse polarity. Many owners find it annoying to be required to replace the separate battery, so I can modify these clocks to run from the vehicle's 12 volt

—*cont'd on p. 7*

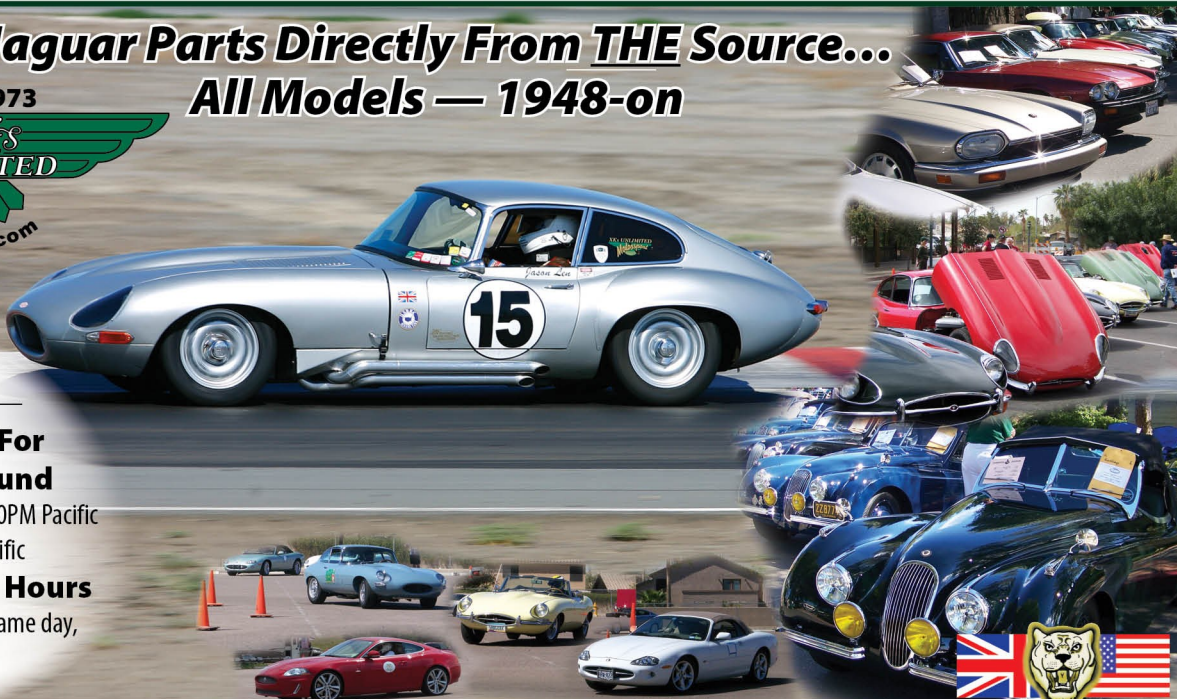
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Repairing Jaguar Clocks — *cont'd from p. 6*

battery if desired.

In 1971 Jaguar gave up on British clocks and started installing the Kienzle, which is made in Germany. They are of a more conventional design, with a small main-spring that is periodically wound by an electromagnet. These clocks can also fail, but luckily that

doesn't happen as often as with the Smiths clocks. Many of the Kienzle clocks are still running after 30 years. However, I have received a few broken Kienzle clocks and I have developed a circuit for them that offers better overload protection and longer contact life.

It's amazing how one thing leads

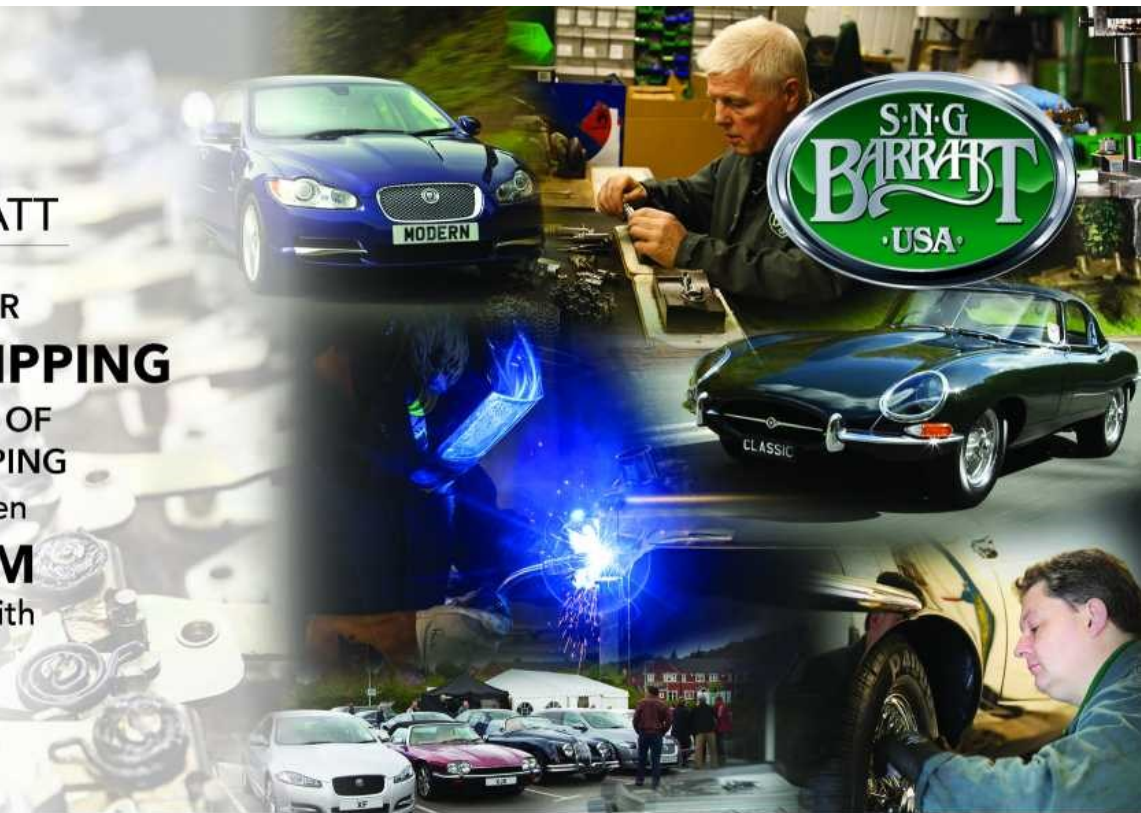
to another. I started out by needing a working clock in my own car and as a result ended up becoming the local Jaguar clock repair person. If anyone is interested in more information they can visit my website, www.JaguarClock.com. My clock repair is also available through www.CoolCatCorp.com, which offers many other worthwhile upgrades for E-Type Jaguars.



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Tom Magliozzi of NPR's Car Talk Dies At 77

Tom Magliozzi, one of public radio's most popular personalities, died on November 3 of complications from Alzheimer's disease. He was 77 years old.

Tom and his brother, Ray, became famous as "Click and Clack the Tappet Brothers" on the weekly NPR show *Car Talk*. They bantered, told jokes, laughed and sometimes even gave pretty good advice to listeners who called in with their car troubles.

If there was one thing that defined Tom Magliozzi, it was his laugh. It was loud, it was constant, it was infectious.

Tom and Ray grew up great friends despite a 12-year gap between them. Both graduated from MIT before going into the car repair business.

"His laugh is the working definition of infectious laughter," says Doug Berman, the longtime producer of *Car Talk*. He remembers the first time he ever encountered Magliozzi.

"Before I ever met him, I heard him, and it wasn't on the air," he recalls.

Berman was the news director of WBUR at the time.

"I'd just hear this laughter," he says. "And then there'd be more of it, and people would sort of gather around him. He was just kind of a magnet."

The Magliozzi brothers grew up in a tough neighborhood of East Cambridge, Mass., in a close-knit Italian family. Tom was 12 years older, the beloved older brother to Ray. They liked to act like they were just a couple of regular guys who happened to be mechanics, but both of them graduated from MIT.

After getting out of college, Tom Magliozzi went to work as an engineer. One day he had a kind of epiphany, he told graduates when he and Ray gave the 1999 commencement address at their alma mater.

He was on his way to work when he had a near-fatal accident with a tractor-trailer. He pulled off the road and decided to do something different with his life.



Tom and friend in his MG TD

"I quit my job," he said. "I became a bum. I spent two years sitting in Harvard Square drinking coffee. I invented the concept of the do-it-yourself auto repair shop, and I met my lovely wife."

Well, he wasn't exactly a bum; he worked as a consultant and college professor, eventually getting a doctoral degree in marketing. And Tom and Ray Magliozzi did open that do-it-yourself repair shop in the early '70s. They called it *Hackers Haven*. Later they opened a more traditional car repair shop called the *Good News Garage*.

They got into radio by accident when someone from the local public radio station, WBUR, was putting together a panel of car mechanics for a talk show.

"They called Ray, and Ray thought it was a dumb idea, so he said, 'I'll send

my brother' and Tom thought, 'Great, I'll get out of breaking my knuckles for a couple of hours.' And he went over and he was the only one who showed up," Berman says.

Berman says the station liked what Tom did and asked him to come back the next week. This time he brought Ray. The rest, as they say, is history.

In 1987 *Car Talk* went national on NPR. The Magliozzi brothers were a huge success. Listeners loved their blend of humor, passion, expertise and just plain silliness.

When it came to cars, Berman says the brothers really did know what they were talking about. But, he says, that's not why people listen to the show.

"I think it has very little to do with cars," he says. "It's the guys' personalities. And Tom especially — really a genius. With a great, facile mind.

And he's mischievous. He likes to prod people into honesty."

It is almost impossible to talk about Tom Magliozzi without talking about Ray. Berman says the affection you heard on the radio dated back to their childhood — and it was real.

"For Ray, he idolized Tom. This is the guy who introduced him to everything in life, and Tom liked having his little brother around," Berman says. "He liked the guy. So when they grew up they were really, really great friends."

Tom and Ray haven't done the show live for two years; *Car Talk* has been airing archives of old shows. Berman says Ray would like to continue doing that, as a tribute to his brother.

--National Public Radio

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For Sale

Club member Barbara Smithen is offering her 2002 Jaguar S-type for sale. It is black with black interior, lightly used (52k miles), and faithfully maintained at Garff Jaguar.

If you might be interested or know of someone who might, contact Barbara at 801-671-5044.

Event Calendar

2015

Tuesday, December 2, 2014
Christmas Party
Spice Bistro, Holladay
See article on [p. 1](#)

March 20-21, 2015
JCNA Annual General Meeting
Philadelphia, PA

September 17-20, 2015
JCNA Challenge Championship
Elkhart Lake, WI

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—*Burma Shave, 1934*

