

Jaguar Jottings



XJS Fuel Gauge Repair—See Page 4

Drive with us !

November 2020 - ottawajaguarclub.com

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Membership with the Ottawa Jaguar Club includes membership with the Jaguar Club of North America, a *Jaguar Jottings* monthly newsletter and JCNA's bi-monthly magazine, *Jaguar Journal*. Make your cheque for \$60.00 payable to: **Ottawa Jaguar Club**. And mail it to the Membership Director, Jay Hunt. 613-521-6839 (leave message)

Please do not mail cash.

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November 2020

I recently took Alex's X-Type estate wagon into Hunt Club Jaguar. It turned into a wonderful service experience. Even with Covid 19 protocols in place the service writers were pleasant and attentive to the

details of the work I wanted done. They have a policy of no charge loaners and I was surprised to find out mine was a 2019 XE 300 sport. I told them not to be in a hurry to get the car serviced as I wanted to enjoy the car.

In the afternoon I received a phone call and an email from the service manager, Ted Rose. Even though I had requested the work to be done, he was concerned with the charges and wanted to give me a breakdown of the costs before proceeding.

I went to the dealership and with the car on the hoist he explained in detail the immediate repairs that needed to be done but also what work could be done at a later visit. His approach was very classy. Some of the parts had to come from Jaguar Canada's warehouse so I

was able to enjoy the car over a weekend. If you need service work, I would recommend that you give the new dealer a try.

By now you will have received a small note and a proxy voting form via email. The Secretary received enough proxy voting forms that the executive is now in a position to add a resolution to the Club's Constitution bylaws. The resolution will simply adopt the use of electronic means to perform club duties, voting, executive meetings and our Annual General Meeting. The balance of the Constitution will remain unchanged.

As noted below, our AGM will now be held virtually, and is scheduled for November 29th

Once again stay healthy and safe.

Lee

"Save the Date" - 2020 AGM

The 2020 AGM has been scheduled for Sunday November 29th beginning at 11am. In keeping with current COVID-19 restrictions, our AGM will be held as a virtual event. Details are currently being worked out so stay tuned, you will be advised as to how to log in / attend this event as soon as the information becomes available.

OJC's 2021 Calendar

Although our social activities are being postponed or cancelled, we are already looking at creating the 2021 OJC calendar.

Being that we must maintain social distancing, we invite you to submit to us a high-resolution picture of your Jaguar with a small write-up, which can be simple or detailed.

We look forward to seeing you all soon. Stay safe and healthy!

Josee

Send your pictures to; ojcactivities@gmail.com

Ottawa Jaguar Club 2021 Membership Now Due

Your 2021 Ottawa Jaguar Club membership is due any time now. As we will not be having any in person meetings, at least before the end of the year, your cheque for \$60 should be made out to "**Ottawa Jaguar Club**" and mailed to the membership director, Jay Hunt:

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24-2420 Bank St.
Ottawa, Ontario

Diagnosing and resolving a fuel gauge problem on an XJS.

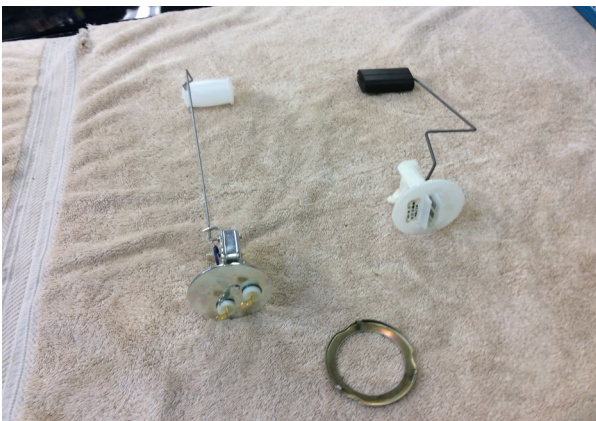
As many of you know I am fond of XJS's, having now accumulated four. Still looking for the right one.

In this quest, some time ago I bought Frank Basten's '88 coupe. Generally it was in nice shape with only a few minor problems. Frank had made some interesting improvements, one of which Jaguar should have thought of. However the fuel gauge did not work. No matter how full the tank, it always registered a quarter full.

I drove the car, and using the computer, managed the matter. This involved getting a fill up to max, resetting the computer to zero, and monitoring the fuel used output display. When I got to 15/16 gallons used, time for a refill. Woe befall anybody who reset the computer without permission! I decided this was not the best operating procedure, so what had to be done?

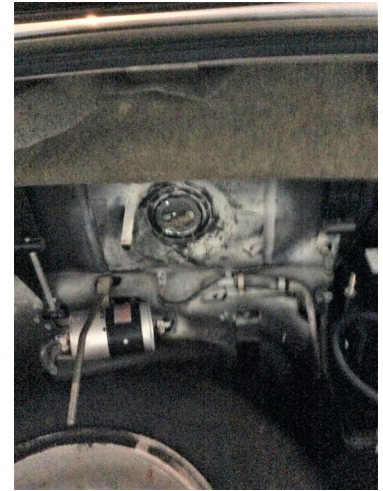
First off, where was the problem? It could be the sender (probable), the gauge (possible), or the harness (very unlikely) as the gauge did register some movement up to quarter full.

For an XJS, there are two models of senders available from Jaguar suppliers DAC5500 and DAC11188 (for face lift models I think).. The DAC5500 is correct for the '88 model year and is an all metal assembly which has 3 connection tabs on the face. The other is an all plastic assembly with three pins on the face, one of which is blanked off by a plastic cover.



The sender is located in the rear face of the gas tank. To get to it you need to take out the spare tire, and probably the battery box cover. This exposes the piece of carpet which is attached to the rear of the trunk wall and hangs vertically. Lift up the bottom of the carpet and tuck it in under the trunk top, exposing the face of the sender. The three tabs are prominent and easy to get at.

Carefully disconnect all three, (the wire is very small), and start the diagnostics. The top tab wire (black) is a ground and should be tested with an ohmmeter to assure the ground is solid.. The left tab wire (green+) is the sender wire.. Now we need an assistant, a significant other can do this. That is, sit in the car and turn on the ignition to the start position, but don't start the car, and observe any motion on the gauge.



Now you ground the left tab wire (green) and the gauge should shoot to the full position. If it does the sender is faulty. If it does not the gauge is faulty (another story another time). Now ground the third wire and the "Low Fuel Level" light should come on in the instrument cluster. If it does not, the likely cause is a burned out bulb. In my case the sender was the problem and likely is in the large majority of cases.

Once the problem has been identified, it is only polite to thank your assistant for her valuable contribution and release her for other duties and a promise of dinner out.

Back to the sender. It is not too surprising that they fail, they are flimsy devices at best, even from Jaguar. So, removing the unit requires a turn of the locking ring counterclockwise about an eighth of a turn. However, before you take this irrevocable step, you must be certain the level of gas in the tank is well below the sender aperture, other wise you will have a trunk full of gas. The first method is the computer method already mentioned, but this can take time. The second is to buy a syphon pump, available at CT for under \$20, and drain the tank completely into several available jerry cans. Lastly you can poke a measuring stick down the filler neck and interpret what you find. I have done all three, I recommend the middle way.

Once you are certain the level is appropriate, the rest is easy. (actually it's all easy). The sender locking ring has 3 equally spaced tangs on its perimeter. I did not like the idea of banging on the tangs, they are not substantial, so I made a "wrench" out of a 2" PVC 45 deg elbow. The plastic part is the same diameter as the locking ring, and by notching the piece to match the tang locations, presto you have a tool. It doesn't matter much about accuracy of location of the notches, as only two will engage the tangs at any time.

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Sender removal tool



Locking ring removed

A gentle turn to the left, and the locking ring loosens and can be lifted off. The sender will not fall out as it is stuck to the flat rubber seal in the face of the tank aperture. Some gentle prying and the sender comes loose. It takes a bit of maneuvering to get the sender float free from the baffles in the tank, and this is a good time to be patient. The last thing you need is a broken sender part dropping into the tank.

You will have to pry off the seal which is likely to be hardened by the passage of time. Clean the face of the aperture where the seal sits. Spread a thin smear of gasket

cement on both faces of the new seal. This will serve two purposes, it holds the seal centered in the aperture while you fiddle with installing the sender, and ultimately makes a leak proof arrangement. A new seal is a must, but you can re-use the locking ring. Place the seal on the aperture face.

The sender has two offset tabs on it's interior face which fit into two matching slots on the aperture diameter. This arrangement assures that the sender is correctly oriented and cannot be installed in any other orientation.

The sender, after being carefully manipulated into its position in the tank, needs to be rotated a bit, back and forth, until the tabs fit into the slots. Now comes the locking ring, place it on by hand and finger tighten, then using the "tool" rotate the ring to your max one handed torque. Connect all three wires and replace the carpet and other stuff.

Now you can sit in the driver's seat, turn on the ignition, and if you have used the syphon system, it is likely the "Low Fuel Level" light will come on. If not then there is nothing more rewarding than a trip to the gas pump and watch that gauge pin move up to FULL.

My super duper plastic tool is available to anybody wanting to do this little bit of maintenance.

Thanks to Fergus Groundwater

Do you know this car?

Spotted in Kemptville recently by Lee H. and obviously not owned by a Jaguar purist, this car and its owner would be an interesting addition to our club. If you know the owner, encourage him (or her) to join, or at least bring to an event or two to see what we are all about.

Ray



MINI APPLE PIES RECIPE

The temperature is getting cooler (with some exceptional days of high heat) and we start thinking of comfort foods. My main go to comfort food is dessert, specifically this one.

These mini apple pies are so easy to make. You can use your own pie crust recipe, having the pie open faced or with a crust and even modify the filling (add walnuts, add maple syrup).

Knock yourself out!

If you have a great comfort food recipe that you want to share, please send them to me and we would be glad to include it in our Ladies Corner!

READY IN: 38MINS	SERVES: 12
INGREDIENTS CRUST 2 cups flour 2/3 cup butter (chilled) 1 teaspoon salt FILLING 5 medium apples (peeled and chopped up into small pieces) 3/4 cup brown sugar 2 teaspoons cinnamon 6 tablespoons flour 2 tablespoons butter (chilled) (These are not my pictures)  	DIRECTIONS Preheat oven to 425 degrees. Get muffin pan out. No need to grease it. In food processor blend flour, salt and butter until it looks like little peas. Add in water and blend just until it looks like it's sticking. Take out and combine it by hand until well blended. Roll out on lightly floured surface until about 1/4 inch thick. Cut 12, 4 inch circles with cup or bowl.(You will need to roll out twice). Note: you can use the rest of the crust for anything you may want to do on top of the pies. Press each circle in muffin tins until all the way up each side, to form little bowls. Mix by hand all filling ingredients and spoon into muffin bowls. Cut up butter into 12 little pieces and place one piece on each pie. You can decorate them anyway you like with extra crust, or just leave plain. Bake at 425 degrees for 16-18 minutes. (Until crust is light brown and apples are bubbling). When cool, just loosen with a spoon and they'll come right out!

Inspired by Dave Bradly's recent article about reinventing the dash in his Challenger, Mike Milton shares his knowledge and what he has learned about classic Jaguar gauges.

Stay tuned for Mike's article on "Oil Accumulators—Not Just For Racing" which will now be published in the December Jottings.

Ray

Gauges And a Winter Project...

Having read the recent articles on gauges, I thought it might be interesting to submit something about the classic Jaguar gauges. They have an 'interesting' design, some mysteries, and one or two simple upgrades that can improve them significantly. The following is based on a series 2 E-Type but is relevant to most classic Jags.

This is an adaptation from the wiring diagram. All of the gauges are simple voltage meters.

The voltage meter is wired between the positive voltage from the battery directly to ground.

The other meters expect to have a specific, fixed, voltage input (either 12V or 10V). They are then wired to a variable resistance, and finally to ground. Each gauge pointer moves between its low point (0 voltage flowing) to its high point (10 or 12 volts flowing). The markings on the gauge face are arranged to represent the desired measure (for example from empty to full).

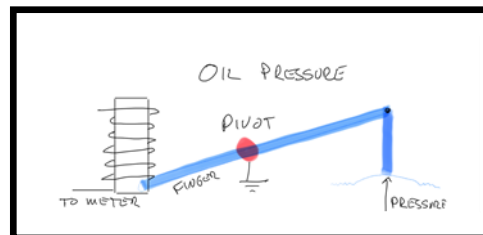
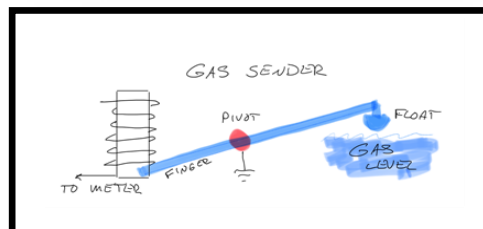
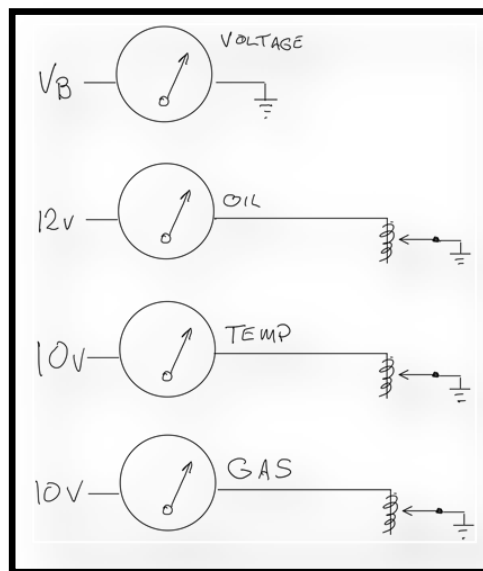
The variable resistance is provided in what is usually called the sender unit. Each sender is similar to an old fashioned volume control. A metal finger moves across a coil of wire. The more of the coil that is in the circuit, the higher the resistance. At one end, there is no wire and the meter is connected directly to ground. At the other end, there is high resistance and the circuit has nearly no connection.

The senders look something like this:

Each has some mechanical mechanism to move the finger from one end to the other of the resistance wire.

For the gas sender, a float rises or falls on the surface of the fuel. For the oil pressure, pressure presses up a membrane to move the lever. In the case of temperature, a bimetallic strip bends as it is heated.

Obviously these devices are open to wear and failure, but there is a more fundamental problem: Where do the 10 and 12 volt inputs come from?



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By looking at your battery gauge, you can see that the battery voltage is close to 12V but varies both up and down as the battery voltage changes while charging or as load discharges it.

The other gauges get their input either directly at battery level (the oil gauge) or from a voltage regulator, shown here in an image from Wikipedia.

It is a mystery to me why Jaguar chose to use the battery level to drive the oil gauge. One result of this is that the displayed oil pressure will change (along with the battery gauge) as the voltage varies from 12V.

More interesting is how the voltage 'regulator' manages to provide 10V:

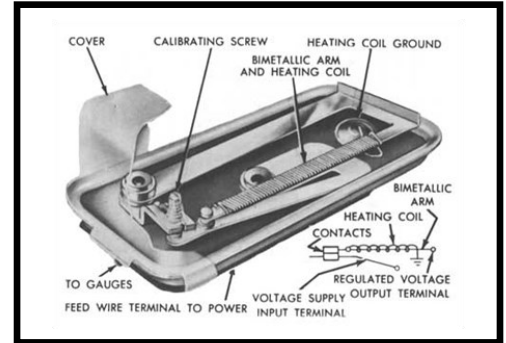
It doesn't. The voltage 'regulator' provides either battery voltage or 0 voltage in a proportion that hopes to average to 10V. It works by heating a bimetallic strip which then bends to open the contact to the output to the remaining gauges. If the input actually is 12V, the contact would be closed 5/6ths of the time and the output would be a square wave averaging 10V. As the input goes up, the strip heats faster and the contact is closed less time. As the input goes down, the contact is closed more of the time. If it goes down to 10V, the contact stays closed.

When working, and at the same ambient temperature that was present when the calibrating screw is set, the output is:

- either 0V alternating with battery voltage to average to 10V,
- or a steady voltage of 10 or less.

In winter you magically get more gas and better oil pressure (just kidding - but it looks that way until the regulator heats up). When it fails either the gauges fall to 0 or you always have ¼ tank of gas (just kidding again).

The good news is also your easy and cheap winter project: Update the regulator to something a bit more modern.



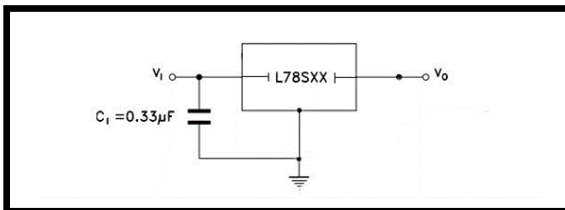
Your New Regulator

Seriously: this job is easy and you can put the parts inside the original housing. You can buy the parts through many sources one of which is mouser.ca.

Any of these [10V regulators](https://www.mouser.ca/Semiconductors/Power-Management-ICs/Voltage-Regulators-Voltage-Controllers/Linear-Voltage-Regulators/_/N-5cg9g?keyword=7810) will work: https://www.mouser.ca/Semiconductors/Power-Management-ICs/Voltage-Regulators-Voltage-Controllers/Linear-Voltage-Regulators/_/N-5cg9g?keyword=7810

Here is the data sheet for the [Texas Instrument chip](https://www.ti.com/lit/ds/symlink/ua78.pdf): <https://www.ti.com/lit/ds/symlink/ua78.pdf>

You need one more part, a capacitor, which can also be found at mouser (or many other places).



Here is a simplified circuit diagram from the data sheet, but omitting the output capacitor. You can add the second capacitor if you wish, but given the fact that the original device simply switched from 10 to 12V it really isn't necessary to worry about spikes in the output.

To complete the project:

Take the existing regulator out of the car, open it, and remove all the components.

Connect the V1 input to the original input and add the capacitor between V1 and ground.

Connect V0 to the 10V output.

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When you are done it will look like the picture to the right.

Here is another discussion of the process (with more pictures) from the [Jag Lover's Forum](https://forums.jag-lovers.com/t/s1-4-2-temperature-question/377934/16): <https://forums.jag-lovers.com/t/s1-4-2-temperature-question/377934/16>

That solves the 10V gauges, but what about my oil gauge??

As an undergraduate I noticed that lecturers left some tasks "to the student as an exercise"; here is an exercise for you.

Make another regulator for 12V. The process is almost the same as above except using this chip <https://www.mouser.ca/ProductDetail/STMicroelectronics/LM217T-DG?qs=UOUhb9503hGQo4HwxJhENg%3D%3D>



The [data sheet is here](https://www.mouser.ca/datasheet/2/389/lm217-1849593.pdf): <https://www.mouser.ca/datasheet/2/389/lm217-1849593.pdf>. Figure 7 (on website page 10) shows the full circuit for a variable regulator. By making a variable voltage regulator instead of a fixed one you can adjust the voltage sent to the gauge. This will have the effect of shifting a gauge's reading either up or down. By doing that you can calibrate, for example, a gauge to match a temperature measured with a thermometer. That said, there are simpler versions further down in the sheet.

Thanks to Mike Milton

Mike would like to welcome any of your questions or concerns in regards to the modifications that he has incorporated into Etta's restoration, or in regards to his articles. Mike can be reached by email at: mikemilton@icloud.com



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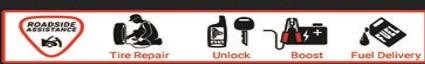

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Events & Activities 2020–2021

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Due to the continuing COVID-19 restrictions all events for the balance of 2020 have been cancelled with the exception of our virtual AGM scheduled for November 29th.

Below is a tentative schedule of events for 2021, you will be kept advised of any additions, deletions or changes as the current pandemic situation evolves.

January	13th	Wednesday	OJC Bi-Monthly meeting - Membership for 2021 due Now	
February	1st	Monday	OJC Darts & Pizza Night	Time & Location to be announced
	7th	Sunday	OJC Breakfast	Time & Location to be announced
	7th	Sunday	OVTC Interclub Darts Tournament (organized by OVTC)	Optional - after breakfast
	14th	Sunday	OJC Valentines Breakfast	Stacked Smoked Meat - Bank St. (Formerly Dunn's)
March	17th	Wednesday	OJC Bi-monthly meeting	Time & Location to be announced
April	14th	Wednesday	OJC Bi-monthly meeting	Time & Location to be announced
May	15th	Saturday	OJC Spring Dinner	Time & Location to be announced
	30th	Sunday	OJC Spring Drive	Time & Location to be announced
June	19th	Saturday	OJC Club Brunch	Time & Location to be announced
July	4th	Sunday	OJC Family Day & Concours	Cumberland Heritage Museum, Cumberland, Ont.
	14th	Wednesday	OJC Bi-monthly meeting	Time & Location to be announced
	24th	Saturday	OJC BBQ Party	Manotick, Ontario
	31st	Saturday	OJC Summer weekend drive or Rally	Time & Location to be announced
August	14th	Saturday	OJC Club Picnic	Time & Location to be announced
September	7th	Tuesday	Hazeldean British Invasion & Pub Dinner	Hazeldean, Ontario
	15th	Wednesday	OJC Bi-monthly meeting	Time & Location to be announced
October	2nd	Saturday	OJC Fall Colours Drive	Time & Route to be determined
	17th	Sunday	OJC Club Brunch	Time & Route to be determined
November	14th	Sunday	OJC 2021 Membership	May be paid anytime now
	22nd	Monday	Interclub Trivia Challenge (organized by OMGC)	Time & Location to be announced
December	11th	Saturday	OJC Christmas Dinner	Time & Location to be announced
	21st	Tuesday	First Day of Winter	Looking forward to spring
	25th	Saturday	Christmas	OJC Wishes you all a Merry Christmas
	31st	Friday	New Years Eve	Drive Carefully & All the Best in the New Year

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editor@ottawajaguarclub.com

Jaguar Jottings is an official publication of the Ottawa Jaguar Club. Twelve issues are produced January to December for the information of its members. We welcome your participation.

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Full Page \$25/month, or \$250/year (12 issues)

Back Cover \$300/year (12 issues)

1/2 Page \$15/month or \$150/year (12 issues)

1/4 Page \$10/month or \$100/year (12 issues)

Business Card \$5/month or \$50.00/year (12 issues)

Marketplace Ads are free to members and will run 3 months unless cancelled or renewed; \$20 to non-members.

Submit advertisements to the publisher and your cheque to the treasurer.



Advertising in Marketplace is free to OJC members, \$20 to others. Ads run for 3 months. Contact the Editor with your advert (editor@ottawajaguarclub.com)
Forward payment to the Treasurer: Jay Hunt, 24-2420 Bank St. Ottawa, Ontario K1V 8S1

Jaguar Jottings accepts advertisements in good faith. It is in your best interest to make every effort to **check offers personally**.

Shore Automotive

Shore St. Automotive has moved. Now **Shore Automotive**, they are located at 1064 St. Laurent Blvd. in the east end.

The phone number has not changed; 613 422 5715.

Email: info@shoreautomotive.ca

Shore Automotive continues to specialize in Jaguar & Land Rover products.



Damm! I almost had that Jaguar!



1300 Michael Street | Ottawa, Ontario | K1B 3N2 | 613.744.5500

Ottawa Jaguar Club Members enjoy discounts on parts and labor for work performed by Jaguar Ottawa. Club members must show their membership card to receive the discount. You will receive a 10% discount on labor rates. Parts, used at time of service, will be priced at cost plus 10%.