



NY-PENN NEWS

NY—Penn Military Vehicle Collector’s Club

JANUARY 2021



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Bill Harris wrhgah@gmail.com

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Easy Company:
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2nd VP: Brant Messer bmesser2@twcny.rr.com

Hudson-Mohawk Company:
1st VP: Bob Muller ironvet@gmail.com
2nd VP: Bill Lichliter william.lichliter@aol.com

Editor:
Stephanie Remmers
nypenn.newsletter@yahoo.com

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Happy New Year to All!

As over the past 10 months we all have experience a new way of life, living during a time of uncertainty, events canceled, and not being able to enjoy all the socialization that we would normally have experienced during the past year. We all need to be positive and look to the future as we begin to plan for 2021. We are all determined to continue to serve and support as we have always done. We are determined to conquer and have events for the upcoming year and we want to enjoy them with ALL of you!

If you have not already submitted your membership application for 2021 please do so as we would not want you to miss any of the upcoming events for this year that we are hoping to have. Note: Hudson-Mohawk Chapter please submit your membership application and payment to club secretary/treasurer so that we have up to date contact information. Your application will then be forwarded to our state treasurer, make checks payable to "NY-Penn MVCC".



You will find this newsletter somewhat shorter than other issues but I am sad to say that many events have been canceled. We are hoping for much more and exciting news as we go thru 2021.



Please Welcome our New Member:

The Hudson-Mohawk Chapter would like to welcome a new member, Jeff Ullman and his wife Aimee. They live in the Cobleskill area and both grew up in Schoharie County. Jeff is retired and enjoys antiques while having much fun "picking" to find his treasures. Jeff is a Veteran of the US Air Force and Air Force Police. Together they own Stonewater Antiques which is always open and can be followed on Facebook. You may have had the opportunity to meet Jeff and Aimee during our Memorial Day Convoy and VJ Day where they offered much assistance in the success of our event. We would like to welcome them to the club and look forward to having them join in future events.

Easy Company

Submitted by: Lorne Coon

Easy Company Meeting Minutes 9/13/20

Meeting commenced at 1:45 with The Pledge To The Flag

Members present: Lorne Coon, Leon Rutkowski, Tommie Bryant, Bill Harris, Florence Stacconi, Gerry Malerba, Bob Hill, Dan Delaney, Chris Robson, Jessica Armstrong (guest), Scott A. Wendt, Phil Norman - WWII Veteran, U.S. Navy Higgins Boat Pilot (guest) , and hosted by Brant Messer.

Old Business: Brockway Truck Museum Show has been cancelled, Veterans Day At The Fair has been cancelled and the Sussex, NJ show has been post-poned until Oct. 2nd and 3rd 2021 due to Covid 19.

New Business: Auburn Motorcade is Saturday 9/20. Meet in the Auburn High School parking lot 10-10:15. If you are not going to be in the motorcade, go to the Weedsport High School.

Sno Top in Manlius Car Shows are Mondays 5:00 pm - 7:30 pm

Cars And Coffee is Saturdays 8:00 am - 11:00 am in the Wegman's Route 31 parking lot.

The last one of the year will be Sept. 26th with a cruise to Rudy's in Oswego.

The late Chad Waybright's M38A1 (in Marine Corps Green) is for sale. Contact Dan Delaney for details.

Heritage Hill in Pompey Car Shows every Saturday mornings.

Bill Harris demonstrated some parts he has been working on and wanted to add to his 1944 Willys MB, formerly owned by the late Jack Downing. He added a front verticle wire cutter and a machinegun pintle-stand on the passenger side with clearance for the windshield. He will be mounting a 1919 .30 cal Browning.

Jack Downing bypassed the steering wheel horn button and had a switch on the dashboard. Bill added a "field modification" to restore it with the wire going up the outside of the column.

Next meeting will be November 8th 1:00 pm at Brant's

Meeting adjourned at 2:20

Easy Company

Submitted by: Lorne Coon

Easy Company Meeting Minutes 11.8.20

Meeting commenced at 1:17 pm with The Pledge To The Flag

Members present: Leon Rutkowski, Robert Messersmith, Tommie Bryant, Jim Green, Bill Harris, Lorne Coon, Scott A. Wendt and hosted by Brant Messer

Bob Messersmith reported that the Living History Museum in Cortlandville (Brockway Truck Museum) would like us to retry having an MV show next October, or if there is another date that we would like better. There was a concern that the October date might be a little chilly. The tentative date is Oct. 19th-20th 2021. The museum has built a new kitchen/serving space on the corner of the building and have poured the concrete for the 1800's 2-bay Firestation recreation. They have a vintage clock converted to electricity and a bell that was cast in Utica to put in the bell-tower. They've made dash-plates to sell with a big truck wearing a mask across its grill for 2020.

Bill Harris brought up the idea of a possible Zoom meeting if there is a Federal Covid 19 shutdown. If there is interest, we would have to investigate all the in's and out's and price. This would also be good for the Directors' meetings.

Bill Harris brought pictures of the modifications that he made to his '44 MB. a Browning .50 cal. on the top pedestal and a model 1919 Browning .30 cal on the passenger side. He showed us the the ammo box holder that he fabricated.

Next meeting will be February 28th 2021 at Brant's

Meeting adjourned at 2:00 pm



Wreaths Across America

During the December membership meeting of the *Hudson-Mohawk Chapter* a motion was made and a vote taken to make a donation of seven wreaths to “Wreaths across America” in honor of our Veterans. At that time all donations were being matched by Jersey Mike’s Subs therefore making the club donation a total of fourteen wreaths. The location of support was Arlington National Cemetery, Fort Myer, VA.

Thank you again for your wreath sponsorship.



“A COMPANY”

No newsletter submissions were received, please submit any future newsletter information to:
nypenn.newsletter@yahoo.com. We look forward to hearing from you.

HUDSON-MOHAWK CHAPTER

The Hudson–Mohawk Chapter unfortunately experienced a quiet fall due to Covid19. The November meeting which was planned to be held at The Maples on the Lake and the Christmas Party which was to be held at the Clarksville Firehouse both had to be canceled. As we were all disappointed we felt the safety and health of our members was our first concern.

December 13, 2020 the Chapter held there first Zoom meeting for the members. It was well received, a great time was had by all attending. Thank you Bob Muller for hosting the trivia game of 25 holiday related questions which gave a lot of information and led to a lot of laughs. Congratulations Brant Messer for guessing the most trivia questions.

January 17, 2021 the Chapter will hold its first monthly meeting for 2021 thru Zoom. We look forward to talking and seeing everyone to share some exciting plans for upcoming events this year. Prior to the meeting on Sunday all members will receive an email from Bob Muller with all information regarding the meeting and how to access thru Zoom or by phone. If you have used Zoom prior please log in a little early so if you experience any problems you will have time to reach out to another club member for assistance. This is an extremely easy process for anyone new to Zoom. Be sure to join us for this exciting event.

“A Big Thank You”

In December Bob Muller received an anonymous donation in the amount of \$125.00 for the benefit of the members of the Hudson-Mohawk Chapter as appreciation to the WWII commemoration.



REMINDER TO ALL

This newsletter is for the benefit of all club members, please feel free to submit articles, pictures, ideas, tech tips, or items you are looking for or wish to sell. Please keep this all club related.

OIL FILTRATION

Submitted by: Bob Muller

Don't shoot me but I had to do this. I have seen a great many posts on the oil filter and oil pressure, or the lack of in the L-134. The latest is this post. There was some talk about the little hole in the oil canister standpipe. This hole plays a bigger part in the overall lubrication system than we give it credit for. If you guys think this is WIKI worthy, let me know and I will put it there.

All You Wanted to Know About Go-Devil L-134 Lubrication System But were Afraid to Ask - By Tony Norton

Okay....First, let's play the WWII jeep oil pressure game. It's easy. Everyone open their mouth wide, and take a deep breath. With your mouth still open wide exhale forcefully. Do this a couple of times. Now, take a deep breath, but this time purse your lips and exhale forcefully. Did you notice that when you did this your cheeks puffed out? Now, remember this and continue reading.

Now let's review the L-134 lubrication system. But before we do let's define Pressure as "The action of a force against some obstacle or opposing force; a force in the nature of a thrust, distributed over a surface, often estimated with reference to a unit's area. " and Flow as "The amount of fluid that flows in a given time".

Oil Pump

Let's start with the oil pump. Let's clear up one sticky point before we go any further. The oil pump does not generate any "pressure" whatsoever. It only creates "flow." It takes "Restrictions" to flow to create pressure.

The oil pump in the Go-Devil engine has a flow rate of one gallon per minute at 250 oil pump (OP) RPMs. The oil pump RPM is 1/2 engine RPM. So, if the engine is idling at 500 RPM, the OP RPM would be 250. Now, if the engine RPM is raised to say... 2000 RPM, the OP RPM would be 1000, and the flow rate would be 8 gallons per minute.

Oil Galleries

Now let's go back a look at the idle speed. At 250 OP RPM, pushing one gallon of oil a minute through an approximately 3/8" diameter main oil gallery with the plugs removed would be easy. So the oil flows unrestricted, so you have flow with no restriction, so no pressure. As the engine RPM is increased, in turn increasing the OP RPM and flow rate, the oil pump is trying to push a higher volume of oil through that 3/8" diameter oil gallery. Given the increased flow rate, the friction of the oil against the sides of the oil gallery will create a slight "restriction" to the flow of the oil and will create a little pressure.

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Oil Pressure Gauge

Now, let’s plug all the openings to the main oil gallery and attach an oil pressure gauge into the main oil gallery on the left rear side of the engine. If we now turn the engine, and drive the oil pump, oil will fill the gauge line compressing some air into the line. Because air is more compressible than oil, slightly lower gauge readings will result than if this line were filled with oil and then attached to the gauge.

Oil will also now fill all the secondary oil galleries that supply oil to the cam shaft and crank shaft bearings. At this point we now have oil filling what we call a “Constant Volume.” This Constant Volume is made up of the main and secondary oil galleries, and the oil pressure gauge and line.

With the constant volume full of oil, the engine operating at 500 RPM, the OP RPM at 250 generating a flow rate of one gallon per minute being restricted by the oil gallery plugs and oil pressure gauge, the gauge will indicate the resultant restriction as “pressure”.

Crankshaft and Cam Bearings

Now we are taking the oil that was flowing through the 3/8” diameter main oil gallery and causing it to flow through several smaller galleries, and then around the crankshaft and camshaft journals. The clearance between the journals and the bearings can be considered as relief ports to the restriction built up in the constant volume of the oil galleries. As the bearings wear and the bearing clearances widen, it effectively makes the relief ports larger. Therefore, more oil can flow unrestricted through the oil galleries and around the journals. This has the effect of increasing the flow rate and reducing the pressure, which is reflected by the indication on the oil pressure gauge.

Oil Pump Relief Valve

We have been talking about flow rate, restrictions, and constant volume. Let’s remember that a resistance or restriction to flow can be measured as pressure. There is a relief valve in the oil pump body that is calibrated in PSI (pressure). It is a spring-loaded poppet valve that is forced off its seat at 50 PSI and is fully open at 75 PSI.

With the engine at idle (500 RPM) and the oil pump is running at 250 OP RPM the relief valve is closed, and at full pump flow rate should be generating 25 PSI at the output of the pump. Given that some of the oil is “flowing” past crankshaft and camshaft journals, the additional oil is not being forced into the constant volume of the oil galleries and oil gauge, so the gauge will indicate a pressure equal to the output of the pump (25 PSI.)

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Now, as the engine RPM increases, the OP RPM will also increase as well as the flow rate. As the flow rate increases and more oil is being forced into the constant volume two things happen. (1.) The oil pressure gauge will indicate the increasing system pressure caused by the restriction to flow of the oil, and (2.) as the flow rate increases the restriction to flow will cause the relief valve to begin to open and shunt the excess oil that cannot be forced through the system directly back in to the oil sump. Since the working range of the relief valve is 25 to 75 PSI, on an unworn engine you should see a minimum oil pressure of 25 PSI at 500 RPM and a maximum oil pressure of 75 PSI at higher RPM. As the bearings in the engine wear, there is less restriction in the oil flow path, so even if the pump is putting out the full flow rate, the indicated pressure will be lower, based on how much the restriction has been reduced at the bearing clearances.

Oil Filter

The oil filter used on the Go-Devil L-134 engine is a “bypass” type oil filter. What this means is that not all the oil is passed through the filter 100% of the time. A “full flow” oil filter inlet is connected directly to the outlet of the oil pump. The outlet of the full flow filter is connected to the engine main oil gallery. In the bypass filter, the inlet of the filter is tapped into the main oil gallery.

In this lubrication system the oil enters the filter canister (military junior) at the side at the top, fills, flows through the filter element, and then flows out through a small hole in the standpipe in the center of the filter. The outlet of the filter is connected to the engine timing cover, where the oil returning to the sump is used to lubricate the engine timing chain and gears.

There is some controversy that a bypass type oil filter is not as effective as a full flow filter. Remember that the oil pump is pumping 1 gallon a minute at 500 RPM and 8 gallons a minute at 2000 RPM. Since the filter is pulling the oil flow off the main oil gallery it is taking advantage of the full flow rate of the oil pump. So if your engine is operating at a constant 1500 RPM all the oil is being passed through the filter about two and half times per minute.

Bypassing the Bypass Filter

There was statement in one of the popular jeep restoration books that advised to bypass the inefficient bypass oil filter. If you got anything out of the paragraphs above describing this oil filter you should now realize that it is very efficient, and the information presented in the book is WRONG.

However, let's say you are not convinced. So what happens when you bypass the filter. There are two ways you might do this.

(1.) You could plug the oil gallery outlet tap just in front of the fuel pump and just stop the flow of oil to the filter. This method will result in depriving the engine timing chain and gears of all lubrication. That front crankshaft counterweight may be "going like a devil", but it is not doing a cannonball, and the oil just does not splash that high. Oil pressure as seen at the oil pressure gauge will remain unaffected.

(2.) You could remove the oil line from the input to the oil filter canister and connect it directly to the port on the timing cover. Seems effective right? Timing chain and gear get lubed. Well...yes they do. But let's look at what you're missing.

First, you have no oil filtration at all. So hard little carbon deposits from the combustion process, plus tiny bits of abraded metal don't get filtered out of the oil. These little guys get forced back into that tiny space between the crankshaft and camshaft bearings. This debris acts just like grinding medium and grinds away at both the bearings and the crankshaft and camshaft journals.

Second, the oil flow is going to take the path of least resistance, or should I say least "restriction." This would be the path provided by that flex oil line you connected to the timing cover. It's as big as the main oil gallery. So guess where most of the oil is going to go? And since the flow is not as restricted as when going through the oil filter, the pressure you see on the oil pressure gauge will be less with the filter out of the circuit than with the filter in the circuit. As the engine bearings are quickly eroded away, you may think the timing chain and gears are thanking you, but they are being eaten up by the same debris that is circulating in the unfiltered oil.

Engineering the Bypass Oil Filter

Many folks have looked at the oil filter canister and wondered "How does this thing work?" You can see where the oil goes in. You can see where it comes out. You see the pipe in the middle that is plugged by the cover bolt, so how does the oil get into that pipe if the bolt is plugging it. Well, about an inch down the standpipe is a small hole that the oil passes through to the outlet fitting at the bottom of the canister. From here the oil flows through a flex line attached to the timing cover and flows onto the timing chain and gears.

Why didn't they just make a screw on top to the oil filter and let the oil just run out the bottom you ask. Why didn't they make that tiny hole bigger so more oil can get through it. Here's why. That tiny hole in the standpipe that the oil must flow through to exit the oil filter is an "engineered" metering hole. The size is calculated based on the total bearing clearance of new bearings. This equals a hole about .055" in diameter.

The reason for this is if the hole was not there, or was any bigger, the oil flow would take the path of least resistance (here we go again, restriction). So, most of the oil would flow forward through the oil gallery, the flex line, into the oil canister, and back to the sump through this hole rather than flowing to the crankshaft and camshaft bearings. This would deprive these bearings of vital flow of oil they would need at the most critical time, which is the bearings half-life.

The hole is the same size as the combined new bearing clearances (about .055"), so oil flows through the main oil gallery, splits off and an equal amount is sent to the bearings and oil filter. As the bearings wear, there is less restriction, so more oil flows to the bearings, but the flow going to the oil filter remains constant because the metering hole never changes size.

How Do I Increase Low Oil Pressure (On the Gauge)?

There is talk about shimming the relief valve spring in the oil pump to increase the output pressure. What this does is to cause the relief valve operating range to move higher. Shims are install in a new pump. Each shim accounts for approximately 5 PSI in the pressure to unseat the relief valve. Shimming this spring is actually used in the manufacture of the pump to set the opening threshold of 25 PSI required to unseat the relief valve. Adjusting the output pressure by adding or removing shims is done at the final assembly pressure test to compensate for variances in the tolerances of the final machining of the pump rotors and body casing.

The end user may elect to attempt to raise the pumps output pressure by adding shims. However, if the pump is badly worn adding shims will not improve the pressure. In 98% of cases shimming the oil pump will not cause the oil pressure to increase because the bearing are worn to the point that there will still be "unrestricted flow" through the wide bearing clearances. Minimum specification oil pressure on the gauge is 10 PSI. Any less than this means that the engine requires that the crankshaft and cam bearings be replaced. And, if you are replacing these bearings you might as well overhaul the engine.

So I Rebuilt My Engine. Why is the Oil Pressure Still Low?

This is a situation that plagues a lot of restorers who hope to get that little Go-Devil humming by doing a rebuild. You started out with real low oil pressure, rebuilt the engine, put in new properly sized crankshaft bearings and a new cam bearing. You did everything right. The oil pressure did go up some, but not as much as you thought it would. And you still don't have that 25 PSI at idle.

Let's talk about that cam bearing. There is only one, but there are four cam bearing surfaces. The bearing is located in the front because that is where most of the bearing load stress is concentrated. No one expected these engines to go this long, and not have a readily available replacement block waiting in a warehouse to be picked and sent to you for a small pittance.

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So, given the years that these engines have been in service, it would be reasonable for one to expect that if the lone cam bearing wears what about the other three bearing surfaces? The cam bearing clearance tolerances is .002" to .0035". Note that the high limit is a bit loose as compared to the main bearings at .001" and the rod bearings at .0008 to .0023". So, the original engine designers thought that when the other three cam bearing surfaces wore to the point that there was more than .0035" clearance, the block would be replaced.

Well...we can't readily do that...can we? So here's what happens. You rebuild the engine, hone the three cam bearing surfaces (open them up a smidgen more), and maybe replace the camshaft. Remember that restriction thing we talked about earlier? Now that those three cam bearing surfaces are a little wider, there is less restriction in this area, so the oil flow rate pass these cam journals is increased, so the developed pressure "at these points" in the engine is less. Take this reduction of the total restriction to the flow of oil in the lubrication system, and you see that the resultant pressure cannot be as great as if the restriction in these bearing surfaces was within the clearance specification.

So, what do I do now? Okay...your cam bearing surfaces are shot. You can't find a replacement block. You found a replacement block but you can't afford it now.

Hmmm....woe is me. But wait...your friendly neighborhood auto parts store and machinist to the rescue. Go to the auto parts store and buy a cam bearing kit for a Ford 302 cubic inch V-8. It will have four cam bearings. Take these to your friendly neighborhood machinist and have him bore the block to accept these cam bearings in the block webbing. Install them and then ream them to the specification clearance for each cam journal.

Shhhh....if you don't tell that jeep judge, I won't. And I don't think the judge will tear your engine down to see why the oil pressure is so good. And guess what? Now you'll be doing the Great Oil Pressure Happy Dance.

Addendum

You say I want to see data. Show me hot run readings with no filter, canister only, and complete assembly. How do I know the guy who wrote that article is not some pencil jockey and his conclusion is based on theory and not hard data...

is a G-503 exclusive . It is based on factory data from a company that remanufactures the L-134 oil pump. They only have 54 on hand when I last spoke with them . Some of it is based on "jockeying a pencil" through some fluid dynamics calculations, reverse engineering techniques, and my own experiences. I think you will find that the data presented will very closely conform to what you will see when you do your "field validation testing." I look forward to seeing the results so we can definitely answer any of the outstanding "oil pressure" questions.

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