

Gear Head Lube: 5th Wheel Grease Pads

Introduction to Gear Head Lube's 5th Wheel Lubricant Solution

Gear Head Lube is excited to announce availability of a completely new novel approach to the lubrication of heavy-duty truck 5th wheels. Greasing the 5th wheel is unfortunately not one of the more favored tasks for drivers; especially as it should be done quite frequently. This “chore” is well known for being potentially very messy, generates trash to be disposed of properly, requires equipment maintenance, takes up valuable time and certainly involves cost of purchased materials.

Despite the unpleasantness, it is vitally important to keep an adequate level of grease on the 5th wheel at all times. Safe operation of the truck depends on smooth turning action of the trailer against the 5th wheel surface. Front tire wear is known to be negatively impacted by insufficient lubrication. Frequent servicing of the 5th wheel surface will pay long term dividends...if only it were a more pleasant task!

The Product

We have created a new type of grease product specifically designed for lubrication of heavy-duty truck 5th wheels [but can also be applied to recreational vehicle 5th wheels as well]. Maintenance of a truck 5th wheel has changed little over the years. The task is notorious for being messy, taking valuable time, use of either too much or too little lubricant and not being done on a frequent enough basis. Also, conventional petroleum-based greases are hardly known for being environmentally friendly.

Our grease product represents an entirely new novel concept in that the product is delivered to the user in a completely clean, non-tacky, solid form. Our “grease pad” is provided in a very convenient hand-held format as shown in the photos below. Individual pads are packaged in a handy six pack box which allows for several services of the 5th wheel. A detailed description of use and application of the new pads is described in a later section.



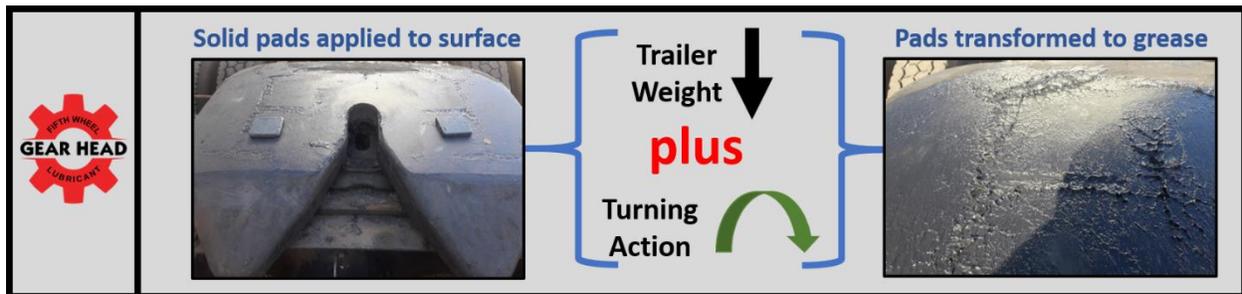
A New Technology Concept

Greases are normally highly effective in providing the lubrication needed for the intended application. This effectiveness is always accompanied by a high degree of “stickiness” of the grease. While a desirable feature for the lubrication function, such stickiness is very annoying when in contact with one’s skin and results in permanent staining of cloth materials. A particular functional challenge for the 5th wheel application is in grease becoming stiff under cold conditions thereby becoming difficult to spread by hand; or being able to pass through a grease gun.

We have developed a new technology which addresses the handling drawback of conventional grease products. The new technology enables our product to be in a completely clean solid form when purchased by the user. As such, our product can be cleanly stored in a simple recyclable box, be stored anywhere within the truck without concern for creating a mess and be applied to the 5th wheel surface by hand without any special efforts of any type.

Once the new “grease pad” has been placed in the proper manner on the 5th wheel surface, the 5th wheel is moved under the trailer in the recommended manner [discussed in more detail below]. The 5th wheel will come into contact with the underside of the trailer. The weight of the trailer will “crush” the pad. Turning action of the trailer against the 5th wheel surface will further squeeze and spread the pad material.

The pressing force and turning action of the trailer against the 5th wheel literally transforms the solid form of the original grease pad into a completely “semi-solid” form. In fact, after the pad has undergone this “transformation event”, it is very much the same type of grease as any other normally semi-solid grease. In other words, you wind up with the semi-solid grease you need and want, but you start with a clean, dry, solid, easy to handle material to apply.



We have been awarded Patent No. 11,008,530 by the US Patent Office for this exciting new product. Applications are pending at a variety of foreign patent offices as well. A link to the patent is included in the Appendix section of the document. An important comment to make is that the technology we have developed is not limited to grease used for the 5th wheel application. A grease which is transformable from a solid form to a semi-solid form could be applied to many other potential applications.

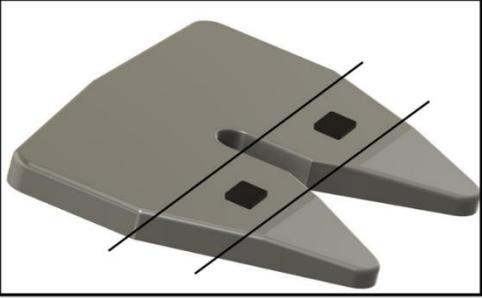
How the Product is Used

The following is a relatively brief overview of our recommendations for proper use of our new grease pads. A more detailed set of recommendations can be found on our website.

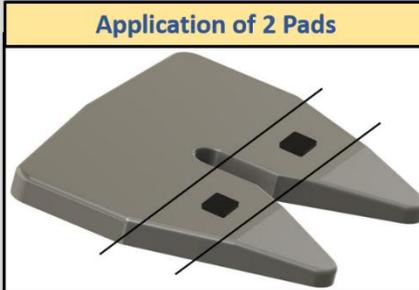
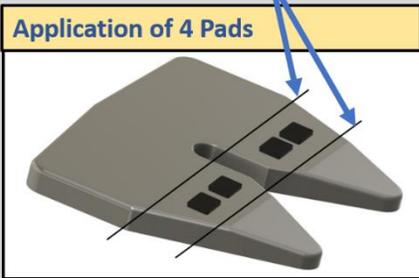
1. ***Location to place the pads:*** It is critically important to place our pads in the correct location on the 5th wheel surface. This is absolutely true of any type of grease as well. And location of the pads is

integrally related to the proper techniques for connection of the truck to the trailer. As noted in the illustrations below, the pads need to be placed on the surface “behind the king pin” and ahead of the tapered rear surfaces on each side of the 5th wheel plate. The pads should be placed about midway between the inner and outer edges of each side of the rear section of the plate as shown.

There is generally no need to apply pads to the “forward” side of the plate as turning action will spread the grease around to that area of the 5th wheel surface. If the operator should desire to apply our pads to all sectors of the 5th wheel, then the hookup procedure must be such that the pads will not be pushed off the 5th wheel surface when connecting to the trailer [as described below].

	<p>It is critically important the grease pads be laid onto the 5th wheel surface between the two lines indicated.</p> <ol style="list-style-type: none">1) This placement avoids having the trailer push the pads out of position2) The placement results in the optimum spread of grease over the entire surface	
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2. **Number of pads to use:** For a “normal service” event, we suggest starting with use of two pads. This is **ONLY A STARTING POINT RECOMMENDATION**. Many factors will come into play which would dictate the optimum amount of grease that will be needed by the 5th wheel joint. If the trailer is typically quite heavily loaded, if there is relatively a lot of turning action between the truck and trailer, if the truck has operated in a lot of rain activity...or a very dusty environment, then for certain we would recommend using more than two pads during each service. However, this can only be **JUDGED BY THE OPERATOR**. Another significant issue is how often a particular tractor unit is pulling different trailers. In these cases, it is entirely a judgement on the part of the operator as to how much lubricant they will apply to their 5th wheel at each service.

	<p>Application of 2 Pads</p> 	<p>If applying more than 2 pads, keep all pads between the same two lines</p> <p>Application of 4 Pads</p> 
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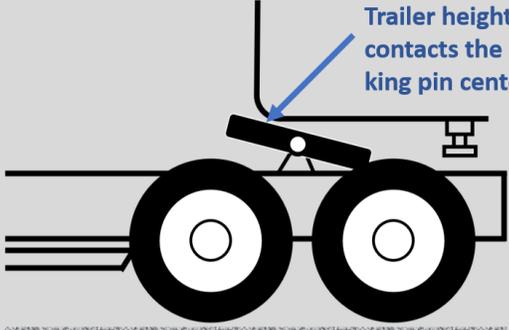
3. **Breaking pads in half:** It is quite easy to break our grease pads in half with one’s hand. One of our customers regularly breaks one pad in half, then puts 1 ½ pads on each side of the 5th wheel as they

feel this is optimum for their typical usage pattern.

4. **Applying the pad to the 5th wheel surface:** Generally, there will be at least a thin film of existing grease on the surface of the 5th wheel. In these cases, our pads will readily stick to even that thin layer of existing grease and become attached very well. If the surface is completely clean of any pre-existing grease, then there are several options. 1) the pads can be tapped by hand down against the surface to some extent which often will make them adhere to the metal; 2) the pads can be rubbed lightly against some existing grease which is commonly found around the exterior surface of the 5th wheel [essentially you are using available grease as an adhesive!], and 3) one can break the pad in half, turn the pad “sideways on its edge” and stick the inside material of the pad against the 5th wheel metal surface. However, again in most circumstances, the pads will stick to existing grease on the 5th wheel very well.

	<p>Application is literally a one-handed job! Just lay the pads down. If any old grease is present, the pads will stick like glue. If the plate is very dry, rub the pads lightly on some old grease. Or push on the pads lightly.</p>	
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5. **Proper hook-up procedure to the trailer:** There are right and wrong ways to connect a tractor unit to a trailer. 5th wheel manufacturers provide guidelines for the correct methods that should be carefully and completely followed. For all these procedures, it is essential that the trailer be positioned vertically in a very narrow range of height compared to the height of the 5th wheel. The front edge of the trailer should contact the “forward surface” of the 5th wheel surface in a manner shown in the illustration below. This is especially important. If the trailer is too low, our pads will be pushed off the 5th wheel surface....in this instance regular grease will also be pushed off the plate as well thus wasting either type of material. If the trailer is too high, there is a chance the king pin could “ride over the top” of the 5th wheel plate and become lodged in front of the 5th wheel entirely.

	 <p>Trailer height should be such that the trailer leading edge contacts the 5th wheel approximately mid-way between the king pin centerline and the front edge of the plate.</p>	<p>NOTE: ALWAYS follow the 5th wheel manufacturer's procedures for connecting the truck to the trailer.</p>
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6. **Summary:** If the new grease pads are positioned properly on the 5th wheel surface, and recommended procedures are followed for connection of the truck to the trailer, the grease pad material will be applied to the two surfaces in the proper fashion. The grease will be spread by turning action over the surface of the plate thus providing the lubricant protection the surfaces need.

Competitive Products

On the competitive front, there are 3 distinct competitive product types that need to be discussed:

1. Grease Pouches [grease filled plastic baggies]
 2. Standard tubes of grease...normally 14 oz of material but can be up to a full pound
 3. "Mini-tubes" of grease. These contain the same grease as the standard size tubes, but contain only about 3 oz of material
1. **Grease Pouches:** Grease pouches are a commercial product which are simple plastic bags filled with conventional grease. These pouches are laid onto the 5th wheel surface in a manner similar to application of our grease pads. When the trailer comes into contact with the 5th wheel, the pouch bursts releasing the grease.



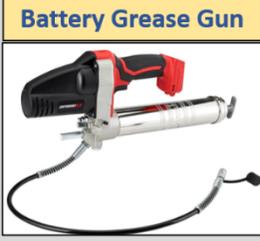
Unfortunately, at some point the baggie will either be pushed out of the joint; or will fall off the trailer surface onto the ground when the trailer is sitting and not connected to a truck. In either case, the baggie becomes a serious source of litter on the roadways and in parking lots. One wonders why this type of product should even be available in the marketplace.

These grease pouches can be purchased individually at most truck stops. But they can also be purchased in larger quantities from internet sources. The retail price of these pouches at truck stops is quite high; normally more than \$3 per individual pouch. Each pouch holds only about 2 – 2 1/2 oz of grease or less than 20% of a standard tube of grease.

 	<p>Grease Pouch after Contact w/Trailer</p>  <p>* Grease shot out of pouch beyond contact area with trailer. This grease is wasted * This grease is quite thin and "runny"; does not seem it will provide good protection</p>	<p>* Considerable amount of grease is left in the pouch....wasted!</p> <p>Pouch Stuck to Underside of Trailer</p>  <p>* Very messy grease pouch ready to fall onto someone's parking lot</p>
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- Standard Grease Tubes:** Standard size grease tubes are normally dispensed with a manual hand-pumped grease gun. However, many manufacturers market electric grease guns which can accommodate standard tubes. If one uses a manual pump gun, it can take a LOT of pumps of a manual gun to dispense the needed amount of grease for a normal 5th wheel service event. It is also exceedingly difficult to keep a grease gun completely clean. Some drivers are known to store their grease gun in a large plastic bag, but that is an imperfect solution.

By definition, a given tube of grease will run out while doing a service. Thus, the driver needs to keep extra tubes in the truck. Time is then required to change out the empty tube for a new tube...a process which is also inevitably messy. Given the amount of grease needed at each service, the driver can expect to have to change out a grease tube during every other 5th wheel service. Overall, this approach burns up a LOT OF TIME!

	<p>* Many strokes to properly lubricate at each 5th wheel service * Cold to the touch when changing tubes in cold weather * May not function well in cold weather</p>	<p>Manual Gun</p> 	<p>* Expensive and short life * Large and Heavy * Need to charge batteries * Grease waste @ tube change * Messy to change tubes * Grease ooze from nozzle * Grease may not flow after tube change</p>	<p>Battery Grease Gun</p> 
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Another issue then is proper disposal of the spent grease cartridge. Most users are not aware of how much of the cost of that grease tube was for the cardboard tube containing the grease itself. A waste container may not be conveniently located when the cartridge is changed out. In such case, the driver would need to have yet another empty plastic bag to put the spent cartridge in. Now you have several items to dispose of that good money was spent on.

Retail pricing of standard grease tubes varies widely; and is impacted directly by the price of oil for

petroleum-based greases. Higher priced products typically claim performance advantages over lower priced rivals. Obviously, it is difficult for a user to discern these performance differences.

3. **Mini Grease Tubes:** Standard size grease tubes mean a quite large and heavy gun dispenser; particularly if a battery gun is utilized. To address this issue, the industry has developed “mini” grease tubes and associated dispensing guns. While more convenient to use, these mini tubes contain a small amount of material [typically only 3 oz]. In most cases, you cannot properly grease a 5th wheel even once using mini tubes unless you are greasing the 5th wheel very, very frequently. These mini tubes are relatively very expensive compared to a standard tube. As a generalized statement, if a standard tube is \$5.75 on a per pound basis, a 3-Pack of mini-tubes is about \$10.75 on a pound basis.



Product Performance vs. Market Greases

One of the significant advantages of these grease pads over conventional greases results from consideration of cold weather conditions. As the ambient temperature declines, conventional greases can become stiff and therefore difficult either: 1) to spread by hand or 2) to be able to be squeezed through a grease gun.

To combat this characteristic, manufacturers need to develop their greases to be as “fluid” as possible at low temperatures to enable either some degree of hand “spread-ability” or “pump ability” through a gun. A consequence of this challenge is that most greases are compromised in terms of their “thinness” under higher ambient temperatures.

A thin grease will allow it to be more easily pushed out of the 5th wheel joint thus requiring more grease to be needed at the next service [likewise more grease gets deposited on the roadways]. There is also then the issue of how well the grease is actually protecting the joint from the trailer load if it is “relatively thin”.

5TH WHEEL GEAR HEAD LUBRICANTS

Gun grease needs a low enough viscosity that it can be pumped through a conventional grease gun at low ambient temperatures.

Typical Gun Grease @ 0°F [-18°C] Can be rather stiff!

The significant challenge for the grease is to still exhibit sufficient viscosity at high ambient temperatures to protect the metal surfaces from high loads from the trailer as well as frequent turning.

Arizona Desert 115°F

Our new grease pads obviously have no obstacle to face like needing to be passed through a grease gun. As such, the formulation of the pads is only minimally impacted due to cold weather spreading considerations. In fact, we have been able to develop the grease to have substantial body at normal temperatures. This “strong body property” means the grease will be retained much better in the 5th wheel joint and not be easily forced out. Depending on the circumstances, it is likely one might use significantly less of our grease pads than many conventional greases on the market.

Application Advantages over Conventional Grease Products

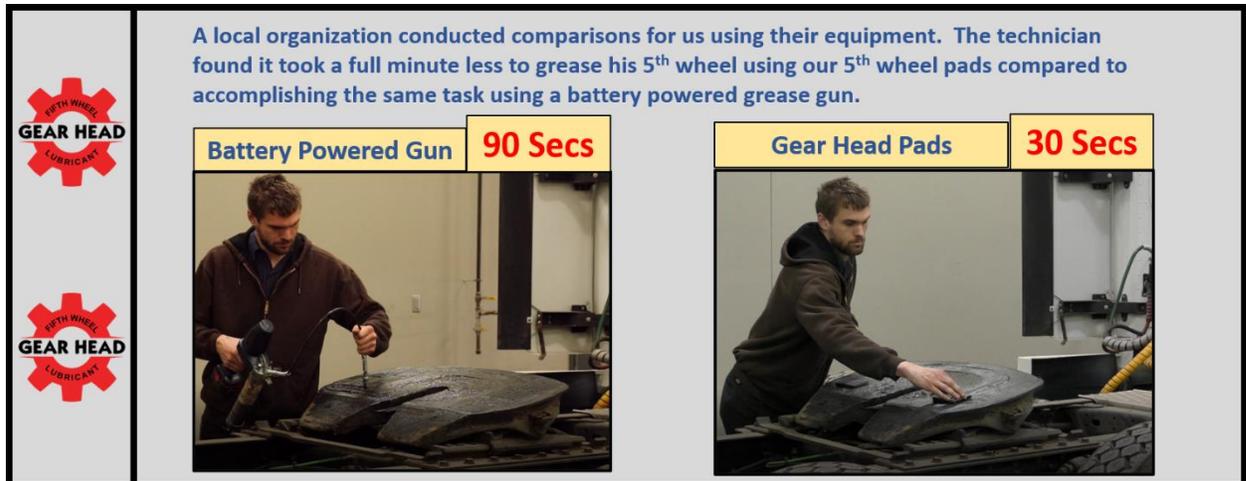
From the above, it is quite clear the number of significant advantages these new novel grease pads offer over current products.

1. **Time Savings** One really needs to handle and apply these pads to appreciate how little time and effort it takes to service a 5th wheel. Normally the operator will know how many pads they will use. The driver then goes to the cab and takes that many pads out of the cube box and carries the pads in their hand back to the 5th wheel. The driver then just lays and presses the pads onto the 5th wheel surface in the desired locations. That is it....that’s all there is to it!

For the case of using an electric grease gun, the driver takes the gun from the cab and carries it back to the 5th wheel. From our experience, electric grease guns are quite slow in delivering grease. It can take a considerable amount of time for the electric gun to actually dispense the amount of grease needed. This burns up valuable time that could be better spent on the road earning income.

For the case of mini-tubes of grease, the operator will need to reload the gun at least once with a fresh tube of mini-grease. That can mean another trip to the cab to retrieve a fresh tube of grease assuming one is available in the truck. Then you have the time required to reload the gun and get it to re-prime with the fresh grease tube. Once the greasing with the gun is complete, the gun has to be returned to the cab. For those who keep the gun in a plastic bag, you have to put the gun back into the large bag.

Electric guns are battery powered. At some point the operator needs to change to charged batteries. Thus, some effort has to be invested in keeping charged batteries available in the truck....something very easy to forget while on the road and certainly not terribly convenient.



Summary: All the activities surrounding servicing of 5th wheels utilizing grease guns takes more time and is much more inconvenient than one would think. Every minute spent working on the truck is a minute away from earning revenue on the road. “Time is money” is never truer that for on-road trucking.

2. **NO MESS!** The contrast between our new approach versus gun greasing is no starker than in terms of how clean the process is to apply our pads. As noted above, for our product, you take the number of pads you need out of the box, stick them to the 5th wheel surface....AND WALK AWAY....DONE! Our pads when in the box are a smooth firm solid material. They do not become a messy grease until they are acted on by the pressing and turning forces of the trailer against the 5th wheel surface. You do not have sticky, messy semi-solid grease in your hand or on your clothing to deal with.

The situation for gun greasing is quite different. For gun greasing the driver must get physically close to the 5th wheel surface and other dirty truck components. Next you have the likely potential of grease oozing out the end of the gun which needs to be wiped off with a towel [then what to do with the dirtied towel?]. Despite best efforts, the gun body itself will get grease and dirt on it...thus the reason some drivers keep the gun in a plastic bag.

Next we have the issue of the grease cartridges themselves and their disposal. Obviously, the grease cartridge itself needs to be properly disposed of. If you don't have a large plastic bag handy in which to put the spent cartridge, one can be reasonably assured that additional grease will get unto unwanted places. Especially if you get grease onto your clothing you additionally risk transferring grease onto the truck seat and interior.... situation can get pretty ugly.

Proper disposal is obviously no issue at all if you have a waste can right next to your truck. But how often is that the case? More often the truck is in a large lot involving a considerable trek to an available refuse container. If you are a fast runner and run at top speed to the refuse can and back, then disposing of spent waste materials need not take a lot of time! Otherwise it is more time not on the road.

Humans create a LOT of trash

- The problem with trash is that it all adds up!
- Reducing trash starts with reducing wasted materials from every possible source
- Our Gear Head 5th Wheel Pads create **NO TRASH** whatsoever!!

For the mini-tubes of grease, the greater number of tubes and high frequency of change-out certainly compounds the chances that grease will get onto unwanted surfaces.

Bottomline: the less time you are anywhere near normal grease products, and the farther away you can stay from them **THE BETTER!**

3. **NO WASTE!** One of the key strengths of our product concept is the absence of any waste. Our pads are a completely self-contained and essentially self-packaged solution. ALL OF THE PAD is used in lubrication of the 5th wheel joint...we're talking ABSOLUTELY ZERO WASTE. Our box that holds the pads is a simple, completely recyclable cardboard box. All the product is utilized, our box is completely recyclable; this product clearly represents a "waste-free technology".

The first grease cartridge issue is to remove the sealing pad off the end of a fresh tube. This sealing pad has one side completely covered in grease which must be set aside on a disposable cloth. The next issue is the spent cartridge. There is always some grease on both ends of the tube when removed from the gun.

Grease cartridges are normally fairly well emptied by the action of a grease gun. However, this does depend on the quality of the gun and usage by the operator. As the tube starts to run low, the gun may start to sputter. At that point, the operator may decide to switch out the cartridge, but the existing cartridge may still have a useable amount of material still inside. This is more so an issue for the mini-tubes whose performance are more gun dependent.

Grease pouches, besides being a litter hazard, also result in some wastage of material. The burst action of the pouch will inevitably leave some amount of grease inside the pouch. Another performance problem noticed is that the grease can shoot out of the pouch at high speed and wind up in places not useful for lubrication of the joint.



4. **Better Protection** As we have noted, we believe a soy-based grease is a superior material to be using for lubricating 5th wheel joints. In addition, we believe our patent-pending formulation provides better protection to the metal surface under normal and high ambient temperatures, yet self-spreads very well under cold ambient conditions. This same feature we further believe in many cases will result in less loss of grease during normal usage. Less loss during operation means less grease needed! We believe in most cases the operator will use less of our product compared to market products.

Made from Soy

Grease products made from soy have been around for some time. Soy is an attractive candidate as a basis for grease based on a molecular feature of soy called polarity. Soy molecules are “polar” which means they possess what is called “net electrical charge”. The charged nature of a soy molecule makes it attracted to most metal surfaces. Such attraction causes a chemical bond to form between the soy molecule and a metal surface. Chemical bonding of soy to the metal means better protection of the metal to the forces of wear and corrosion.

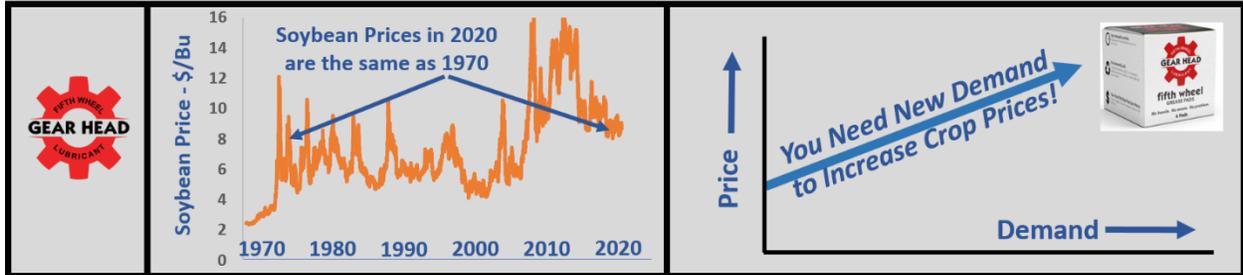
Traditionally the drawbacks of using soy center around factors such as consistency of properties of the supplied soy oil over time, shelf life of soy oil and cost of soy which may fluctuate considerably due to ag market dynamics.

We are fully aware of these factors. We have taken them into complete account as we have developed the formulation of our product for the intended application. Accordingly, we see no downside to applying soy to our grease product and thereby enjoy the fundamental advantages that soy provides as a lubricant.

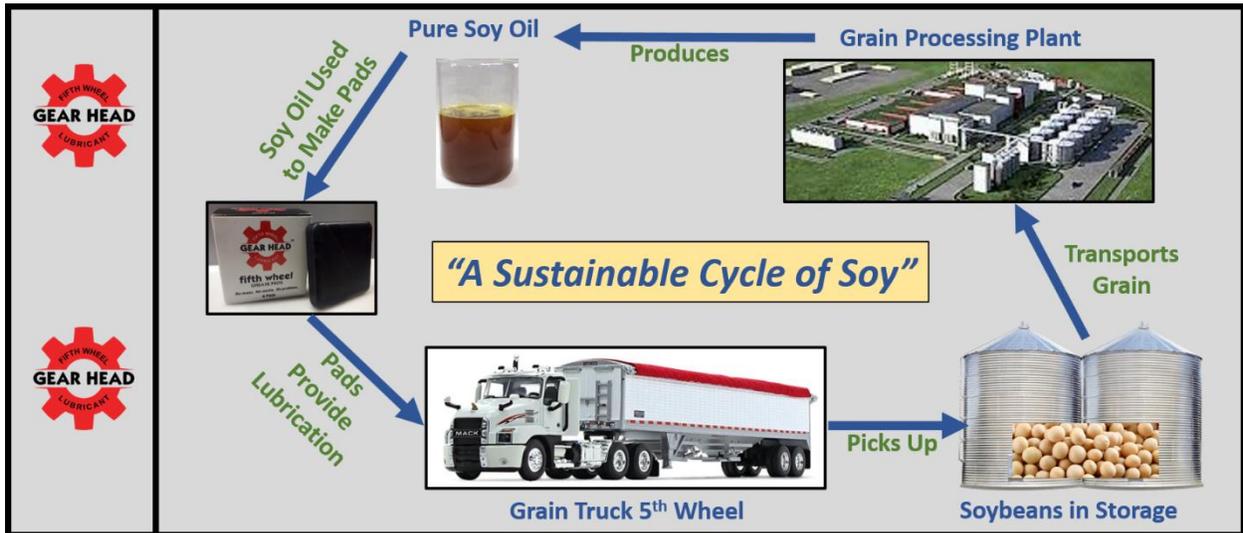
Supporting the Farm Economy

Utilization of bio-based materials has been a fundamental driving force in development of this novel new grease technology. Market prices for biomaterials like corn oil and soy oil have been rather low for some time now. Thus, if one can successfully employ soy oil from a performance viewpoint, then you enjoy both the performance and low-cost benefits of this material. While it is possible soy prices might

rise at some point in the future, all indications are for a substantial worldwide supply for the foreseeable future.



One of the critical factors that can benefit US farmers is to develop uses for crops like soybeans that are outside of the food arena. Use of soy oil for a 5th wheel grease represents a substantial market opportunity for soy. 5th wheel grease is consumed in considerable volumes not only in the US but throughout the world. Widespread utilization of these soy-based grease pads would consume a meaningful amount of soy oil. More demand is what the soy market so badly needs.



Green to Start; Green to the End

Our new grease product is truly green from beginning to end. As mentioned, the bulk of the product is created from 100% pure soy oil. Our patent-pending formulation of ingredients provides highly robust lubricant protection of the 5th wheel surface. Yet we do not need to utilize the types of additives used in nearly all other commercial grease products. Commercial competitive products very frequently employ a variety of chemical additives to provide satisfactory grease performance.

Like all other 5th wheel grease products, our grease will eventually be pushed off the surface of the 5th wheel; much of it will fall to the roadway surface. Traffic will push and spread the grease material into the pours of the road surface. When rain or snow melting events occur, some portion of the grease will be washed to the roadside and ultimately into nearby soil. While the loss of grease from an individual truck may not seem significant, there are over 2 million Class 8 units in the US alone. As a consequence,

millions of pounds of 5th wheel grease eventually wind up on the roadsides of American's highways.

	<p>Tens of thousands of miles of main highways cut right through prime agricultural land across the US</p> <p>Main interstates can see thousands of heavy-duty trucks cross the same spot in a single day</p>	 <p>Iowa Field of Corn</p>
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Clearly the environment would benefit greatly from a rapidly biodegradable 5th wheel grease. Nature will eventually biodegrade most types of chemicals; but it can take years. In the meantime, those same chemicals may have already made their way deep into our soils. More seriously, those chemicals will find their way into waterways to be transported far and wide before biodegradation is complete.

 	<p>Trucks themselves are a likely prime source of pushing oils and greases from the roadway surface onto the roadside</p> 	 <p>Crops are located only 50' or so from the sides of roads in many areas</p> <p>Countless ponds, rivers and other waterways cross or are right next to most mah roadways</p> 
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Being made principally from pure soy oil, our grease product could hardly be considered a “hazardous material” in the first place. Nonetheless, the soy oil will decompose very quickly once it is on the roadway. Other ingredients we utilize in our formulation are fully biodegradable as well and will biodegrade very quickly along with the soy oil.

Made in the USA

We manufacture our new grease product in our facility in Cedar Falls, IA. The most significant component of our product is 100% soy oil. Soy oil is derived from pressing soybeans also grown in Iowa. All other components used in creating our product are manufactured in the US. Even the boxes used to package our product are supplied by a local box manufacturer. We can say with unambiguous clarity that our product is totally made in the USA!



Packaging

A 3” cube box is provided as the base unit of packaging for the new grease pads. Each cube box holds six individual pads. These boxes hold the pads securely; yet the pads are very easily removed from the box. Total weight of the six pads is 380 g or 14.5 oz. Many of the “standard tubes” of grease on the market are 14 oz in weight. Thus, our cube box represents slightly more material than a standard tube of grease.

On our own website, we are not selling individual cube boxes. Our packaging currently offers 3 options:

- A carton box which contains four (4) cube boxes; in other words 24 individual pads
- A carton box which contains twelve (12) cube boxes; in other words 72 individual pads
- A carton box which contains thirty-two (32) cube boxes; in other words 192 individual pads

Other suggested bulk quantities would certainly be entertained.



We can also package cases onto pallets for wholesale customers. Due to the economies of shipping pallet quantities, customers can realize quite low prices for the product in terms of shipping costs.

Due to limited space available, only a few key application instructions are printed on the box. However, very useful and detailed instructions can be found on our website.



Summary

Ask any driver if they enjoy lubricating their 5th wheel. Please let us know if you find anyone who does. The current methods of applying grease to 5th wheel surfaces are THE CAUSE OF THE PROBLEM. While grease guns get grease onto the surface, there is mess, waste and time involved that should be accounted for when this method is used to perform the needed service.

A task that is unpleasant runs the likelihood of not getting done as often as it should. Frequent lubing of the 5th wheel surface is good insurance against any possible chance of creating an unsafe condition. Also, the industry recognizes lack of proper 5th wheel lubrication as having a direct negative impact on front tire wear.

Drivers need a very simple, clean and time-effective means of lubricating their 5th wheel surfaces. Our new grease pads are that solution. It is difficult to imagine something more convenient, clean and less time consuming than this new product. Take a couple out of the box and lay them onto the 5th wheel, you're done. We believe our product will save drivers time that is better spent on the road earning revenue.

NO MESS...NO WASTED MATERIAL...NO TRASH TO DISPOSE OF...NO LITTER ON THE ROADWAY

Wide-spread use of our soy-based grease pads would result in a meaningful consumption of soy oil from soybeans. A new added source of demand for soybeans provides solid support to the farm economy.



