



Pentagon Lubricants (I) Private Limited



*Recipient of 'Model 5s Company'  
By ABK-AOTS DOSAKAI, Japan.  
1<sup>st</sup> Company in India to be conferred in SSI category.*

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*an initiative  
of  
Pentagon Lubricants (India)  
Private Limited,  
Chennai,  
India.*

*for the benefit of  
its esteemed customers*

*to know more about us  
please visit  
[www.pentagonlubricants.com](http://www.pentagonlubricants.com)*

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# **CUSTOMER EDUCATION PROGRAM**

*Customer Education Program, monthly mailer of Pentagon Lubricants (I) Private Limited*

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Beyond Creating  
Great Products,  
We Are Here To  
Create More  
Educated  
Customers!

*foreword  
by  
s.alex wilfred  
managing director*

*Dear All,*

*New Year Greetings!*

*We start this New year January, 2014 with our issue:10<sup>th</sup> of our Customer Education program (CEP).*

*With tremendous and positive response received from our customers about our earlier issues we are now going ahead with our next issue.*

*The topic on the Viscosity of the Lubricants covered in our last issue was highly appreciated by our readers & Customers.*

*Gear Box lubricants would be the topic covered in the current CEP issue.*

*Through the current CEP Issues, we will be to able reach to our customers and create awareness to them on gear box Lubricants and by proper analysis and maintenance how they could maximize the system performance.*

*If you wish your friend or colleague in Purchase/Commercial/Production/Quality/Maintenance department to be benefitted by our CEP please send us their contact details.*

*Cheers!  
S. Alex Wilfred*

*Topics Covered In This Issue:*

- Gear Box Lubricants
- Lack of Gear Box Lubricants
- Improper Lubricants
- Conclusion



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## Gear Box Lubricants

### All Gears require proper Lubricants in appropriate amounts.

A main point to consider is that gearboxes exist in a variety of formats, but all require lubrication because they all have moving components that transmit power through rotation.

This means that contaminants can not only cause a breakdown in the health of the lubricant (and thus a failure in the lubricant's ability to perform efficiently), but will also interact with the moving surfaces to cause wear, leading to component failure.

Adhesion, abrasion and corrosion of component surfaces will typically result from oil contamination or unhealthy lubricants.

The two factors that are the most common causes of premature failures in gearboxes are :-

1. Lack of Lubrication - Operating a Gear Box without lubricant, frequently leads to failure of the unit.
2. The use of incorrect lubricants - A second common cause of failure in gearboxes is the use of inappropriate lubrication





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## Lack of Gear Box Lubricants

- ❖ Running a unit dry will rapidly cause damage to the Gear.
- ❖ Gear Manufacturers often ship gear boxes dry for a couple of reasons
  - The added weight of lubricants adds to the shipping cost.
  - Numerous manufacturing facilities have standardized on a specific lubricant supplier, and while any lubricants are interchangeable, they should not be mixed. Hence shipping a gear unit dry allows the end users to ensure commonality within their facility.
- ❖ A related failure occurs when there is too little Lubrication. This can often be the result of the gear box mounting.
- ❖ The gear box construction and the manner in which lubrication moves with the gears can be such that a unit under mounting may require as much as 50% more lubrication than a unit with over mounting.
- ❖ Failure to increase the amount of lubrication will mean that the bearings on the output shaft will run dry and fail in a relatively short period of time.
- ❖ For any given gearbox, there is no physical reason a unit may not be mounted over or under orientation, so long as proper lubrication levels are maintained.
- ❖ One of the problems that results from insufficient lubrication is that failure is not immediate.
  - The unit will perform well for a time, perhaps a few weeks or a month depending upon application.
  - As a result, a technician may not make the connection between too little lubricant and unit failure, and may repeat the error.
- ❖ Determining how much lubrication is required for a gear box in a specific mounting orientation is relatively easy.
- ❖ Gearbox manufacturers provide this information in their catalogs, manuals and online. There should also be application support staff available by phone as well as field sales staff who can provide guidance





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## Improper Lubricants

Gearbox manufacturers have identified and tested specific lubricants for use in their products. Whenever possible, it is best to follow these recommendations. The selections they have made are based upon the goal of providing the best possible unit life for the customer.

Beyond having the “best” lubricant for a given gearbox, there are specific lubricant characteristics that are known to damage gears.

Lubricants that include extreme – pressure (EP) additives of sulfur or chlorine will sometimes soften the bronze gear surface, with the result being a reduction in unit life.

Many lubricants that are classified as Ep will include these chemicals.

While it may seem intuitive that an Ep lubricant will be appropriate for gearing, in this case it is actually the opposite, as EP additives will accelerate wear on the bronze gear by softening the gear teeth.





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## CONCLUSION

By taking these simple but critical steps, you can ensure the longest life from the installed gearboxes.

**TIP #1** A bath system is not recommended for either low or high speeds in gearboxes. Under low speeds, a low-viscosity lubricant drips off the lower gear before it can be distributed to upper gears. In high speeds, the lubricant can be slung off.

**TIP #2** When selecting a gear lubricant it is important to consider the load, speed, temperature, gear type and finish, and application method. In general, higher viscosity fluids are needed for higher loads and temperatures, lower speeds, rougher finishes and for worm gears. Extreme pressure additives should be used for heavy loads and moderate temperatures, but are not effective with yellow metals such as bronze or brass.

**TIP #3** It is generally better to use an oil one grade too high in viscosity than too low in viscosity in gear applications because the more viscous oil will provide more load carrying ability and maintain a better film strength. A Lighter oil may contribute to adhesive wear, Low Load – carrying ability and tooth damage. Ensure that the oil is not so viscous that it cannot be distributed properly through the gear case.

**TIP #4** Refitting gearbox vents with breathers that restrict the ingestion of airborne dirt and debris will help control contamination from entering the unit. The reduced strain on the bearings in the gearbox due to the cleanliness improvement, reduces wear by an estimated 50 percent

**TIP #5** Overfilling a gearbox sump can be just as damaging as under-filling. Overfilling may cause air entrainment and foam, overheated oil and leakage due to overflow. Over time, oxidation may occur due to increased temperatures and exposure to air

