Operating Conditions

1. Acceptable ambient temperature range

   1) Standard ambient temperature range of standard Paramax gearboxes
      
      Standard ambient temperature range of standard Paramax gearboxes is -10 to 40°C (14 to 104°F).
      Even if the ambient temperature is within this range, when thermal rating is exceeded, cooling fan or oil cooler unit
      will be required. According to temperature conditions, appropriate lubricants, which are recommended in the maintenance
      manual, should be used.

   2) When the ambient temperature is below -10°C (14°F)
      
      Even if a low viscosity lubricant is used, when the ambient temperature is below -10°C (14°F), the lubricant circulation
      in the gearbox may be insufficient. Therefore, when the ambient temperature is below -10°C (14°F), an oil heater is required.
      If the ambient temperature is below -40°C (-40°F), oil seal and standard steel material should be redesigned.
      Consult us for details.

   3) When the ambient temperature is above 40°C (104°F)
      
      Consult us for the thermal rating.
      Allowable oil temperature under operation for Paramax gearboxes is 95°C (203°F).

2. Acceptable oscillation range

   Vibration level is determined by amplitude, oscillating speed, frequency and oscillating acceleration.
   The acceptable value of the Paramax gearboxes is as follows.
   
   Amplitude      ...... below 50 μm
   Oscillating speed ...... below 2.8mm/s
   Oscillating acceleration ...... below 1g

   Refer to the fig.1 (Page2) for the acceptable oscillating range. Install the Paramax gearboxes on a rigid mount
   to fit into the acceptable range.
Fig. 1 Acceptable Oscillation Range

<table>
<thead>
<tr>
<th>Oscillating frequency f (C/S)</th>
<th>Amplitude a (μm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td>2.8</td>
</tr>
<tr>
<td>50</td>
<td>1.1</td>
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<tr>
<td>100</td>
<td>0.7</td>
</tr>
<tr>
<td>500</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Oscillating speed (mm/s):
- 1.1mm/s
- 2.8mm/s
- 7.1mm/s

Oscillating acceleration (g):
- 0.5g
- 0.7g
- 1g
- 2g