Please contact your local international sales office for detail information. The global network of Sumitomo Heavy Industries is at your service for SEISA gears and other products.
SEISA: A leading transmission system manufacturer

SEISA Gear Ltd. was first established as a manufacturer of anchors and anchor chains in 1916, and further expanded their capabilities to the design and manufacture of a variety of gears. As an established gear manufacturer in Japan with a proven history of over 90 years, SEISA has accumulated international-standard technologies and achieved remarkable success.

The rapid pace of technological innovation in recent years has raised the demand for highly efficient gear transmission systems in applications that require high-speed rotation and large torque transmission capabilities. SEISA has designed their products to meet and exceed these complex requirements, in addition to optimizing size and weight properties.

As a result of their ingenuity and state-of-the-art engineering, SEISA’s high quality products are trusted and used in various fields and applications around the world.

N-Series High Speed Gear Units

The N-series high-speed gear units are products developed by SEISA through our extensive experience and state-of-the-art-technology.

Technical advantages

- Casing optimally designed using FEA for maximum rigidity and low noise
- Optimally designed for every application
- Cast-iron casing integrated with a bearing housing for excellent vibration damping characteristics and high rigidity
- Enhanced load capacity achieved through adoption of three kind of casings with the same center distance but different bearing spans
- Compatible with installation of any monitoring systems
- The turning device is a fully automatic ON/OFF system incorporating a rugged right-angle bevel drive and an SSS clutch

High load capacity

- Tooth profile optimization and tooth trace correction
- Highly accurate bearing calculation using an FEM-based plain bearing calculation program based on extensive knowledge and expertise acquired over many years
- Adoption of newly developed multi-lobe bearings with excellent stability and load capacity
- Designed with optimum bearing spans to minimize shaft deformation
- Experience in manufacturing more than 7,200 high-speed gear units

Design technology

The strength of our gear units can be evaluated according to ISO, DIN, API, AGMA, BS, and other domestic and international standards. The casing and many other parts are standardized to reduce manufacturing lead-time.

The N-series high-speed gear units are available in three different types of casings for applicability to a wide range of specifications, from low to high gear speed ratios.

We have developed new bearings with excellent vibration damping features and established a reliable method of analyzing stability to completely solve shaft and bearing vibration problems.

The single side cover design results in easier maintenance of the seals, pump-driven gears and SSS clutch.
Single Stage Parallel Shaft Type High Speed Gearbox

Compact, high efficiency, low vibration and noise achieved by our accumulated experience and state-of-the-art technology

**TURNING DEVICE**
- Compact sized with high efficiency
- Turning device is driven by a rugged right angle reducer with automatically controlled SSS clutch

**PINION**
- Made of forged special alloy steel
- The pinion with integrated shaft is dynamically balanced with tooth profile modification and trace correction for optimum performance at high speed

**PLAIN BEARINGS**
- Shafts are supported on plain journal bearings with pressurized oil supply
- Bearing design utilizes four lobe bearing for stable and high efficiency operation
- Taper-land thrust bearing with integrated journal bearing

**CASING**
- Rigid structural cast iron casing for reduced noise level
- Horizontally split casing machined with high accuracy after appropriate stress relief
- The rigidity of the casing is studied with FEA to minimize deformation under stress

**LOW SPEED GEAR**
- Made of forged special alloy steel and fixed to the low speed shaft by interference fitting (keyless) to minimize unbalance
- Tooth surfaces is carburized and finished by highly accurate grinding
- Dynamic balancing is also performed after assembling the gear to the shaft

**LUBRICATION OIL PUMP**
- Lubrication oil pump driven by the gear fitted on the low speed shaft

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**DIMENSION (mm)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Standard</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Width</th>
<th>Height</th>
<th>Weight (kg)</th>
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</table>

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[Image of the gearbox with dimensions and specifications]

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**Notes:**
- Compact, high efficiency, low vibration and noise achieved by our accumulated experience and state-of-the-art technology.
- Turning device is driven by a rugged right angle reducer with automatically controlled SSS clutch.
- Made of forged special alloy steel, the pinion is dynamically balanced with tooth profile modification and trace correction for optimum performance at high speed.
- Shafts are supported on plain journal bearings with pressurized oil supply.
- Bearing design utilizes four lobe bearing for stable and high efficiency operation.
- Taper-land thrust bearing with integrated journal bearing.
- Rigid structural cast iron casing for reduced noise level, horizontally split casing machined with high accuracy after appropriate stress relief.
- The rigidity of the casing is studied with FEA to minimize deformation under stress.
- Made of forged special alloy steel, the low speed gear is interference fitted to the shaft.
- Tooth surfaces are carburized and finished by highly accurate grinding.
- Dynamic balancing is performed after assembling the gear to the shaft.
- Lubrication oil pump driven by the gear fitted on the low speed shaft.
**N-series features low noise, low vibration and high efficiency!**

**Rugged high-speed gear units for power generators and compressors**

### STRUCTURAL ADVANTAGES
1. Bearing cap-integrated casing with high rigidity and high-stability bearings with low noise
2. Form grinding for tooth profile optimization and tooth face correction
3. Newly developed bearing calculation method for optimum bearing design
4. Use of optimum bearings matching the specifications
5. Optimum bearing spans for minimum shaft deflection
6. Completely free of vibration problems thanks to the newly developed rotor stability method of analysis
7. Selective use of different types of gears (helical or double helical gears) for higher efficiency
8. As a result, efficiency is increased by approx. 0.5% up to 99.5%

### ENHANCED LOAD CAPACITY
1. Development of optimum strength calculation method (for gears and bearings)
2. Form grinding for tooth profile optimization and tooth face correction
3. Newly developed bearing calculation method for optimum bearing design
4. Use of optimum bearings matching the specifications
5. Optimum bearing spans for maximum bearing life
6. Computed integrally for vibration and noise reduction
7. Selective use of different types of gears (helical or double helical gears) for higher efficiency
8. As a result, efficiency is increased by approx. 0.5% up to 99.5%

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**MODEL SELECTION DIAGRAM WITH SERVICE FACTOR OF 1.4 FOR AP1613 APPLIED**

- SF = Service factor
- Np = Low speed shaft rpm
- Ng = High speed shaft rpm

In case service factor of over 1.4 is required, select the model after calculating the torque ratio by KW/Ng x Service factor / 1.4

**EXAMPLE**

- KW = 18863 kW
- SF = 1.4
- Np = 10681 rpm
- Ng = 4760 rpm
- Torque ratio = 18863/4760 = 3.96
- Speed ratio = 10681/4760 = 2.24
- Selected model = L4248

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**TRANSMITTING POWER TABLE FOR GENERATOR AT 1500 RPM SF=1.1**

**TRANSMITTING POWER TABLE FOR GENERATOR AT 1800 RPM SF=1.1**

**TRANSMITTING POWER TABLE FOR GENERATOR AT 2000 RPM SF=1.1**
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