Features

1. Compactness
   - Simplicity of design, enclosed in an aluminum die-cast casing.
2. Low noise and high efficiency
   - The spiral bevel gears are made of case-hardened alloy steel.
3. Freedom of installing orientation
   - The unit can be installed easily in any orientation.
4. Maintenance-free
   - High-grade grease is sealed in the casing before shipping.
5. Selective speed ratio
   - Gear ratios of 10/1 or 1/2 are available to meet most applications.

Lubrication

A standard volume of lubricant is sealed at the factory before shipping.

Points to observe during use

1. Environmental space suitable for installation
   - Ambient temperature: -10°C to 40°C
2. Ambient humidity: 80% or less
3. Atmosphere: Well-ventilated, dust-free air not including corrosive gas and steam
4. Location: Indoors

2. Mounting methods
   - Bolt the unit firmly on a machined plain surface free from vibrations.

3. Connections with mating machinery
   - Before connecting to the mating machinery, please verify the direction of the shaft rotation to avoid breakage of the equipment.

   - Take care not to cause interference with an oil seal or case surface when fitting a coupling, sprocket, pulley, gear, etc. to gear shafts, especially for models without steps on the shaft. We recommend an H7 tolerance for the bore.

   - In the case of direct connection, alignment must be made accurately so that the gear shaft and the mating shaft are inline. We recommend flexible couplings.

   - When using a chain, belt or gear drive, position the gear shaft and the mating shaft accurately parallel with each other so that a line connecting the center of one shaft to the center of the other shaft makes a right angle with the shafts.

4. Operating precautions
   - Do not get near or touch rotating portions of the machine such as the shafts during operations. You may get caught and injured by parts.

   - Stop the operation immediately when the noise level or the temperature rises abnormally. Do not restart until all of the causes are analyzed and proper repairs are made.

   - Sudden reversal of the direction of rotation could affect the gearbox and mating machinery. Be sure to stop the unit before reversing the rotation.

   - Be sure to keep the load torque and overhang load (O.H.L) within the allowable range during operation.

CAUTION

1. Be sure not to exceed the allowable values. Units with (1.2) reduction ratios have the slower speed in the Y-axis.

2. The values in the table are in effect when the service factor is 1. When the units are used under other conditions, refer to the Service Guides.

3. Overhang load (O.H.L) means the load applied to the middle of the overhang shaft, perpendicular to the axis. When using the units under other conditions, refer to the factors K1 and K2 described in the Service Guide.

4. On the 1.2 speed ratios unit is used as a speed increment (from the Y-axis to the X-axis), the Y-axis torque becomes one half of the Y-axis torque shown in the table.

   - The Y-axis D.H.L is the sum of the values on both right and left axis.
   - The Y-axis D.H.L of type is the sum of the values on both left and right axis.

   - Please see our web site for corrections on KHK Catalogs.
### Bevel Gearboxes

#### L Type

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[Caution] 1. The arrow marks on the shafts are intended to show the relative direction of rotation. The units can be driven in the opposite direction as well.
2. In the unit, the X-axis rotates clockwise, and the Y-axis counter-clockwise.
3. The key grooves in the X-axis and the Y-axis do not always coincide in phase with each other.
4. The tolerance of shaft diameter is JS7 h7.
5. The pinion gear is mounted on the x-axis (the input side) in 1:2 ratio units.
6. The key dimensions are per JIS B 1301-1976 (Standard Grade).
7. The backlash angles are measured at the X-axis (Input Shaft).

#### Key Backlash of Shaft Rotation

- **KBX-101L**: 0.40 kgf cm
- **KBX-102L**: 1.80 kgf cm
- **KBX-151L**: 3.10 kgf cm
- **KBX-152L**: 3.10 kgf cm

### Bevel Gearboxes

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