2.4 Precaution of usage for Anti backlash spur gears

Function of Anti backlash spur gear

Backlash is a necessary function for gearing, however anti-backlash spur gear can remove backlash mechanically.

The principle of KG-Anti backlash spur gear is that of a time-honored method, KG-Anti backlash spur gear has springs that produce load. These springs generate larger torque than the axial torque applied to a pair of gearbox. Select Allowable torque based on calculation of load produced from the springs.

Mechanism of Anti backlash spur gear has built-in springs that pull each other between gear A and B to pinch the Mating gear like a scissor.

When rotated direction of the gear is reversible, the springs of Anti backlash spur gear can continue to maintain suitable torque by pinching Mating gear.

If interference occurs due to gear quality, Anti backlash spur gear with gear A and B absorbs the interference by stretching the spring mechanism while engaged between Anti backlash spur gear and Mating gear



Fig. 8 Mechanism of Anti backlash spur gear.

Regarding the Mating gear for KG-Anti backlash spur gear

Mating gear for KG-Anti backlash spur gear is compatible with other makers. However, it is advisable to use KG-GROUND SPUR GEARS or KG-STOCK SPUR GEARS for best results.

Adjustment of zero point as n0

When built-in springs on the Anti backlash spur gear is in free condition (free condition- no tension to spring), positions of tooth tips between gear A and B do not match.

Method of adjusting n0. Firstly fix gear B, secondly rotate gear A in the engraved arrow direction until both gear have no tension from spring for types BS and BW and gradually rotate the installed spring towards tension direction. Zero point n0 is the first position of matched teeth between gears A and B with tension of spring.

Method of settlement of required Allowable transfer torque

1. Method of Shifting pitch (n)

Firstly, select a suitable NS or NSG series from KG-Anti backlash spur gears. Secondly, select the numerical value of shifting pitch n higher than your required torque from the Allowable transfer capability torque table.

For NSU series, there is a limitation of selection for shifting pitch in accordance with the Allowable transfer capability torque table. The allowed shifting is only two (n=2).

Please refer to Allowable transfer capability torque table for NSU series.

2. Method of settlement for Allowable transfer torque

For example to obtain the required Allowable torque for your existing required NSG part number NSG50S 60B+0808. If the current torque speed is 15N per cm it is required to shift to n3 pitch before getting the next larger value.

3. In case where Allowable torque required is unattainable (n).

- (1) In such a case where gear engagement operation cannot be obtained after shifting pitch (n) is set in accordance to [Method of settlement for Allowable transfer torque], please re-study the amount of desired torque. The actual torque applied to gear may sometimes vary from theoretical torque.
- (2) If a suitable shifted pitch n0 cannot be selected from table of limitation of Anti backlash to function (N cm) for your required Allowable torque after setting the shifted pitch n0 by [Method of settlement for Allowable transfer torque], please do not hesitate to call us for discussion.

Precaution for additional process to Anti backlash spur gear

Additional machining to Anti backlash spur gear is not advisable, as deformation will result in loss of anti backlash function.

Precaution for additional machining to KG- Anti backlash spur and Ground spur gears, dismantle gear A and B before additional machining. Note: remove snap ring at the hub of Anti backlash gear to dismantle. Note: remove snap ring at the hub of Anti backlash gear to dismantle.

Beware of dent marks when doing additional works or dismantling gear A and B.

Remove the burrs on the gear perfectly after additional machining.

As a precaution for re-assembly of gears after additional machining, ensure dust free condition between gear A and B.

Customized Anti backlash spur and ground spur gears.

Please provide us with the following details for making customized Anti backlash spur and ground spur gears.

- 1. Gear data and type of gear
- 2. Usage of maximum torque [N · m]
- 3. Usage of Revolution per minute [min⁻¹]
- 4. Material
- 5. Usage environment (Air, under water, vacuum and etc.)
- 6. Lubrication
- 7. Check surroundings for object that may cause interference to gear.

We look forward to receiving your gear drawing and above details for customized Anti backlash spur and ground spur gears.