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Strain Wave Gear Installation Manual

Precautions on installation

1. Strain Wave Gears must be installed in a clean environment .No foreign matter can be allowed to enter the gearbox during installation in order to avoid damage to the gear during use!

2. Please make sure that the tooth surface and the flexible bearing are always fully lubricated. It is not recommended to use the gear with the tooth surface facing upwards at all times, as this may affect the lubrication.

3. After installing the wave generator, please make sure that the engagement of the flexspline and the circular spline is 180 degrees symmetrical (Illustration. 1), if it is deviated to one side (Illustration. 2) will cause vibration and damage to the flexspline soon.

4. After the installation completed, please run at a low speed (100 rpm), if there is any abnormal vibration or abnormal sound, please stop immediately and contact us to avoid the damage to gear by incorrectly installing.

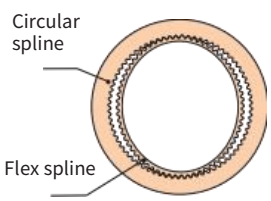


Illustration .1

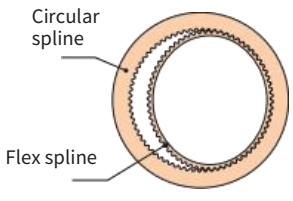
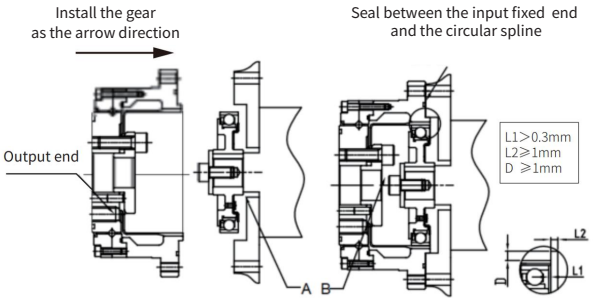


Illustration .2

■ Installation of HSS Series

The circular spline is fixed, the flexspline as output end.
The reduction ratio is not changed



1.Apply grease evenly on the flexible bearing and fill the cavity at A with grease (please use the specified grease and do not change the grease arbitrarily to avoid damage to the gear), install the wave generator onto the motor shaft or connecting shaft at the input end, use screws and flat washers to connect and fix it.

2.Firstly, apply a layer of grease evenly on the inner wall of the flexspline, and then inject grease into the space B , the amount of grease injected should be about 80% of the cavity of the flexspline (please use the specified grease, do not change the grease arbitrarily avoid the damage to the gear), then install the gear in the direction as shown in the illustration above.align the long axis of the wave generator with the long axis of the flexsplinel when installing, and fix the gearb in place with the corresponding screws, with a tightening torque of 0.5Nm.

3.Set the motor speed to about 100 rpm/min, start the motor, and tighten the screws in a criss-cross pattern,increasing evenly to the corresponding tightening torque of the screws in four to five times.(See Illustration 1 for the corresponding tightening torque of screws.) All screws used for connection and fixation must be grade 12.9 and coated with Loctite 243 glue to prevent screw failure or loosening during work.

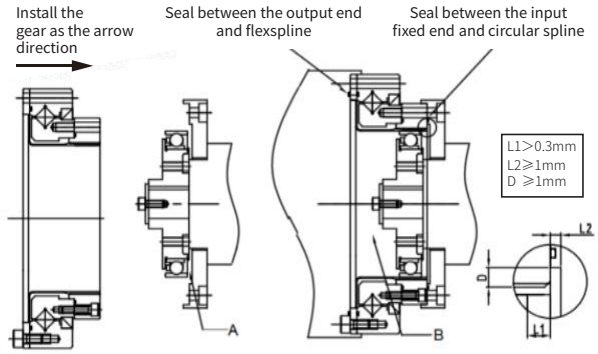
4.The requirements for the mounting surface connected and fixed with the gear: flatness 0.01mm and perpendicularity to the axis 0.01mm threaded hole or through hole and axis concentricity 0.1mm.

Note: When the gear is used with the output end (output end shown above) always facing downwards horizontally (this is not recommended), the amount of grease injected into the inner wall space of the flexspline needs to above the teeth engagement surface (i.e. spaces A and B need to be fully filled with grease) or contact us. Please use the specified grease, do not change the grease arbitrarily to avoid damage to the gear.

Static sealing should be adopted between the circular spline and the mounting surface of the input end to ensure that the grease will not leak during the use of the gear, so as to avoid the damage to the gear when it is working with little or no oil.

The first installlation method for HHT- I/II series

The circular spline is fixed, the flexspline as output end.
The reduction ratio is not changed



1. Apply grease evenly on the flexible bearing and fill the cavity at A with grease (please use the specified grease and do not change the grease arbitrarily to avoid damage to the gear), install the wave generator on the motor shaft or connecting shaft at the input end, use screws and flat washers to connect and fix it.

2. Install the gear in the direction shown in the Illustration above. When installing, align the long axis of the wave generator with the long axis of the flexspline. After it is in place, fix the gear with the corresponding screws. The tightening force the screws is0.5Nm.

3. Set the motor speed to about 100rpm/min, start the motor, and tigthen the screws in a criss-cross pattern,increasing evenly to the corresponding tightening torque of the screws in four to five times. (See Illustration 1 for the corresponding tightening torque of screws)All connecting and fixed screws must be grade 12.9 and coated with Loctite 243 thread glue to prevent screw failing or loosening during work.

4.First, apply a layer of grease evenly on the inner wall of the flexspline, and then inject grease into the flexspline space B. The injection amount is about 80% of the flexspline cavity (please use the designated grease, and do not replace the grease at will to avoid causing damage to the gear).

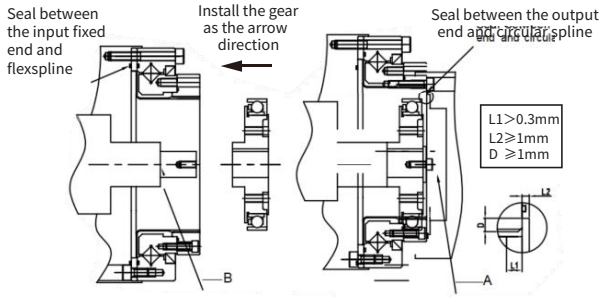
5. The output end is also fixed by according to 3. All connecting and fixed screws must be Grade 12.9 and coated with Loctite 243 thread adhesive to prevent screws from failing or loosening during work.

6. Requirements for the mounting surface connected and fixed with the geabox: flatness 0.01mm and axis perpendicularity 0.01mm threaded holes or through holes and axis concentricity 0.1mm.

Note:When the gear is used with the output end (shown in illustration above) always facing downwards horizontally (this is not recommended), the amount of grease injected into the inner wall space of the flexspline needs above the teeth engagement surface (i.e. spaces A and B must be fully filled with grease) or contact us. Please use the specified grease, do not change the grease arbitrarily to avoid damage to the gears.Static sealing should be adopted between the circular spline of the gear and the mounting surface of the output end and between the flexspline and the mounting surface of the input end to ensure the grease will not leak during the use of the gearbox and to avoid the damage to the gear in the case of working with little or no oil.

■ The second Installation method for HHT- I/II series

The flexspline is fixed , the circular spline is out put end.
The reduction ratio+1



1. Install the gear at the input end and fix it with the corresponding screw connection, with the screw tightening torque 0.5Nm.

2.Firstly, apply a layer of grease evenly on the inner wall of the flexspline, and then inject grease into the space B , and the injection amount is about 80% of the cavity of the flexspline (please use the specified grease and don't replace the grease arbitrarily to avoid the damage to the gear).

3.Install the wave generator in the direction shown in the illustration above. When installing, align the long axis of the wave generator with the long axis of the flexspline. After it is in place, rotate the wave generator to align the key groove on the cam with the key groove on the input shaft.install the key (apply the key with Loctite 638 glue), and fix the wave generator on the shaft with screws and large washers.

4. Apply the grease evenly on the flexible bearing, the A cavity is filled with grease (please use the specified lubricating grease, do not replace the grease in order to avoid causing damage to the gearbox).

5. Set the motor speed at about 100 rpm/min, start the motor, and tighten the screws in a criss-cross manner with four to five equal increments to the corresponding tighten torque of the screws.(Screws corresponding to the tighten torque of AppendixI), all connections and fixed screws need to be 12.9 grade and coated with Loctite 243 thread adhesive to prevent failing or loosening during work.

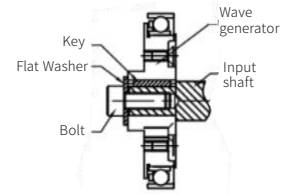
6. Refer to step 5 to fix the output end as well. All screws should be grade 12.9 and applied with Loctite 243 thread adhesive to prevent screw failing or loosening during work.

7. Requirements for mounting surface connected to the gear: flatness 0.01mm and shaft perpendicularity 0.01mm threaded holes or through holes and shaft concentrici- ty 0.1mm.

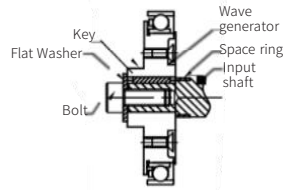
Note: When the gear is used with the output end (shown in illustration above) always facing upwards horizontally (this is not recommended), the grease injected into the inner wall space of the flexspline needs to be more than the teeth engagement surface (i.e., spaces A and B must be fully filled with grease) or contact us.Static sealing should be adopted between the circular spline and the mounting surface of the output end as well as between the flexspline and the mounting surface of the input end,in order to ensure that the grease will not leak during the use of the gear and to avoid the damage to the gear in the case of working with little or no oil.

■ The connecting and fixing method of wave generator

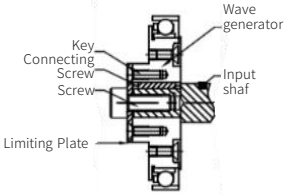
1.Input shaft has a shaft shoulder, it can be connected with wave generator directly. As shown in the illustration right.



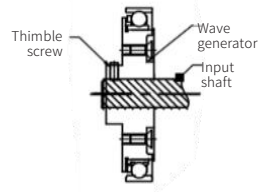
2.Input shaft has a shaft shoulder, but it's too long. You can add a space ring on the shaft (the parallelism of space ring should be within 0.01mm), then connected and fix with wave generator.



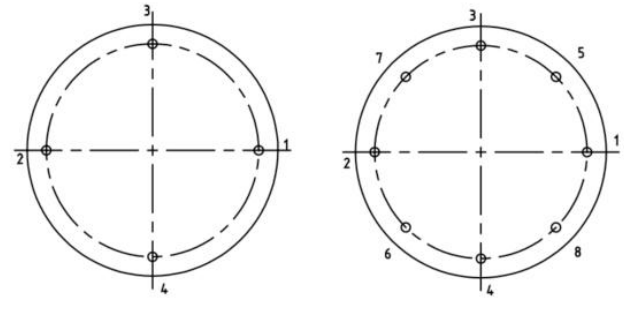
3.Input shaft has no shaft shoulder. Fix a connection gasket on the wave generator, then connect and fix with the input shaft. As shown in the figure.



4.This fixing method is suitable for small size model, optical axis input. Input shaft inserted into the wave generator, then connect and fix it through the thimble screw on the wave generator. As shown in the illustration.



■ Screw locking method



Appendix 1: Recommended screw tightening torque table

Screw class	12.9 Grade						
Size of screw	mm	3	4	5	6	8	10
Tightening Torque value	N.m	2	4	9	15	35	70

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