



GRAZIANO[®]

High-Precision Gears

Bevel Gear Sets



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Dana is a leader in the manufacturing of bevel gears applying all the technologies available on the market today.

We have two modern and specialized plants for crown wheels and pinions (CWP) production (Sommariva Perno – north of Italy and Noida Delhi – India).

Continuous and not continuous indexing methods are widely used for more than 250 different ratios.

We have a long history and more than 50 years of experience in the traditional wet (oil) cutting, but nowadays the dry (no-oil) cutting system is widely applied in production through a large selection of Carbide stick blades.

Both HSS and Carbide blades can be accommodated on sharpening machines in order to have the full process in house (coating is an outside source).

The geometry of the blades can be certified in-house against the nominal data through a 3D scanning inspection.

We can machine parts (after heat treatment) by applying grinding and/or lapping process.

Through the state-of-the-art teeth grinding process, unmatched bevels can be developed and produced in a serial production environment.

Furthermore, the grinding process can eliminate the need of deviation either for the pinion and the crown gear mounting distances.

This option, beside the opportunity to get unmatched parts can deliver an easier and lighter assembling process.

The most updated machines are available and net connected to the quality room (3D machines):

- **Soft Cutting:** Gleason 280CX and 600HC, Klingelnberg C29 and C50
- **Teeth Grinding:** Gleason 280G, Klingelnberg G30 and G60
- **Lapping:** Gleason 600HTL and Oerlikon L50

For the ground job it is remarkable to say that both from a gear design stand point and machining, Dana has the capabilities to realize very fine-tuned microgeometry in view of noise and durability optimization.

For static inspection of the parts, CMM (Zeiss, Gleason and Wenzel) is running with G-Age and Komet software. For matching inspection we have several Gleason testers and three Single Flank testing equipment for objective analysis (transmission error is a standard parameter used both at the prototypes stage and in mass production environment).

Especially for the lapped sets and because of the heat treatment influence (distortions) we have developed an internal procedure that allows to monitor continually the consistency of the process and to achieve the desired contact pattern.

A specific and well-trained team works daily to develop new jobs and to assist production in case of any kind of quality issue.

Bevel sets are one of the core product of the company, yet it is remarkable that we have been dispatching an average of 400.000 sets/year.

Gleason technology to cut straight gears (i.e. for different housing applications) is used in both Coniflex and Revacycle methods. Furthermore, net forged straight gears can also be supplied if required.



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