Gear Span Measurements

THE QUESTION

I have been extensively searching for perfect formulas that suit designers for gear design.

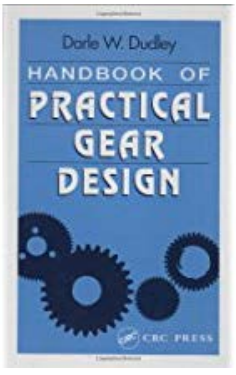
Kindly recommend reference book or any source that contains all of the gear formulas.

Kindly also provide me a formula for Span measurement over teeth and DOP calculation for any gear. I am very confused to what formula really apply to the involute type of gear design.

Span measurement & DOP are widely used in gear manufacturing so please help me out.

EXPERT RESPONSE PROVIDED BY CHUCK SCHULTZ, BEYTA GEAR SERVICES (beytagear.com): There are many reference books with the formulas you are looking for but most engineers are happy to use various on-line calculators. For gears of standard dimensions [no rack offset or "X" factor designed into the parts] the typical calculator works very well. For custom designed gears, those with non-standard dimensions, you must find a formula or calculator that allows you to enter the rack offset value.

Most gear design software packages output manufacturing and inspection dimensions such as measurement over pins or balls or a span over a specified number of teeth. It is recommended that engineers understand how to perform these calculations manually, of course, so they know what factors will influence the outcome. Once non-standard geometry becomes involved the iterative "manual" calculation becomes a real chore and confidence in the manually generated answer may be limited.



If you want a reference book that covers the topic in detail you can always count on Darle Dudley's Gear Handbook or any number of classic books. Some vendors include the formulas in their training materials that are available on-line. Gear Technology advertisers who make spline gages or cutting tools are also likely to be helpful.

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