



**Fine Pitch Spur & Helical Master Gears - Arbor Mounted Type**

Master gears are used to determine the accuracy of work gears. When work gears and master gears are rolled together on rolling fixtures with either fixed or adjustable centers, dimensional variations may be determined through the use of indicators, charts, or other suitable indicating devices. Master gears can be either spur or helical. While master gears can be manufactured to any specification required, the standard 4" P.D. \* 1-1/4" bore size is common for 3 through 6 P.D.; 3" \* 1-1/4" bore for 6 through 16 P.D. and finer.

1. Classification shall be composite tolerances in this area.
2. Not applicable 50 DP and finer. The profile tolerances shown are predicted on comparison of the master gear profile to the profile of a control master.
3. Over one pin.
4. Tolerance all plus.
5. Predicted on comparison with a control master, .0001 additional end easing is allowed is either end of the face, 80% central face shall be as shown.
6. Bore: The difference between the effective bore size and the size between any two diametrically opposite points shall not be more than the bore tolerance. Bell mouth will be allowed on 10% of the total bore length, with a length of bell mouth not to exceed .250 total.
7. Arc Tooth Thickness: After determination of arc tooth thickness, necessary adjustments to the OPD shall be calculated from the formulae shown for the calibration of master gears. NOTE: Value is based on Arc Tooth Thickness = Cp/2

Class	Classification by Composite Tolerance					
	1	2	3	4	5	6
Tooth-to-Tooth	.0002 Ref.	.00014 Ref.	.00010 Ref.	0.00007	0.00005	0.00004
Total	.0005 Ref.	.00035 Ref.	.00025 Ref.	0.00018	0.00018	0.00009

Class	Tolerance on Gear Elements					
	1	2	3	4	5	6
Pitch (tooth-to-tooth spacing)	0.00012	0.0001	0.00008	1	1	1
Profile (2)	0.00015	0.00013	0.00001	0.0001	0.0001	0.0001
Runout (tiv)3	0.003	0.00021	0.00015	1	1	1
Bore (4 6)	0.0001	0.0001	0.00005	0.00003	0.00003	0.00003
Outside Rad. (4)	0.0005	0.0005	0.0005	0.0005	0.00025	0.00025

Gear element	Tooth thickness grade	Pitch Diameter	Tolerance
Arc Tooth Thickness (7)	Grade A	Thru 2.25	-0.0002
		Over 2.25	-0.0003
	Grade B	± 1.25 % of circular pitch	
Lead- Max Total		5.0001	
Face Runout (tiv)		.00005 (.0001 Max.)	