

ENGINEERING INFORMATION

SPUR GEARS

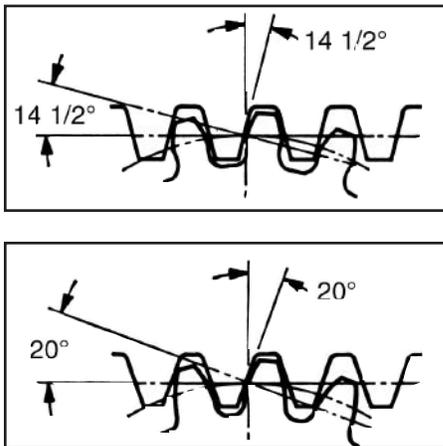
DIAMETRAL PITCH SYSTEM

All stock gears are made in accordance with the diametral pitch system. The diametral pitch of a gear is the number of teeth in the gear for each inch of pitch diameter. Therefore, the diametral pitch determines the size of the gear tooth.

PRESSURE ANGLE

Pressure angle is the angle at a pitch point between the line of pressure which is normal to the tooth surface, and the plane tangent to the pitch surface. The pressure angle, as defined in this catalog, refers to the angle when the gears are mounted on their standard center distances.

Boston Gear manufactures both 14-1/2° and 20° PA, involute, full depth system gears. While 20°PA is generally recognized as having higher load carrying capacity, 14-1/2°PA gears have extensive use. The lower pressure angle results in less change in backlash due to center distance variation and concentricity errors. It also provides a higher contact ratio and consequent smoother, quieter operation provided that undercut of teeth is not present.



TOOTH DIMENSIONS

For convenience, Tooth Proportions of various standard diametral pitches of Spur Gears are given below.

| Diametral Pitch | Circular Pitch (Inches) | Thickness of Tooth on Pitch Line (Inches) | Depth to be Cut in Gear (Inches) (Hobbed Gears) | Addendum (Inches) |
|-----------------|-------------------------|---|---|-------------------|
| 3 | 1.0472 | .5236 | .7190 | .3333 |
| 4 | .7854 | .3927 | .5393 | .2500 |
| 5 | .6283 | .3142 | .4314 | .2000 |
| 6 | .5236 | .2618 | .3565 | .1667 |
| 8 | .3927 | .1963 | .2696 | .1250 |
| 10 | .3142 | .1571 | .2157 | .1000 |
| 12 | .2618 | .1309 | .1798 | .0833 |
| 16 | .1963 | .0982 | .1348 | .0625 |
| 20 | .1571 | .0785 | .1120 | .0500 |
| 24 | .1309 | .0654 | .0937 | .0417 |
| 32 | .0982 | .0491 | .0708 | .0312 |
| 48 | .0654 | .0327 | .0478 | .0208 |
| 64 | .0491 | .0245 | .0364 | .0156 |

| 20° P.A. | 14 1/2° P.A. |
|---|--------------|
| 64 D.P. | |
| 48 D.P. | 48 D.P. |
| 32 D.P. | 32 D.P. |
| 24 D.P. | 24 D.P. |
| 20 D.P. | 20 D.P. |
| 16 D.P. | 16 D.P. |
| 12 D.P. | 12 D.P. |
| 10 D.P. | 10 D.P. |
| 8 D.P. | 8 D.P. |
| 6 D.P. | 6 D.P. |
| 5 D.P. | 5 D.P. |
| 4 D.P. | 4 D.P. |
| Tooth Gauge Chart is for Reference Purposes Only. | |
| | 3 D.P. |