

Module and Diametral Pitch

The module of a gear shows *how much is big the teeth*.

The module multiplied for the number of teeth gives the pitch diameter, and the module multiplied for π gives the value of the pitch..

We can call the module (measured in mm), the diametral pitch .

With: $m = \text{modulo in mm}$ e $m_{dp} = \text{diametral pitch}$

We have the following formulas:

$$m = \frac{25,4}{m_{dp}} \quad (\text{in mm}) \quad m_{dp} = \frac{25,4}{m} \quad (\text{numero puro})$$

A gear with a module $\frac{1}{16} \cdot 25,4$ have a Diametral Pitch 16 ($m = 1,5875$ mm).

The following table are the relationship between the module and the Diametral Pitch and vice-versa

Relationship between Module and Diametral Pitch

| Module | Diametral Pitch | Module | Diametral Pitch | Module | Diametral Pitch | Module | Diametral Pitch |
|--------|-----------------|--------|-----------------|--------|-----------------|--------|-----------------|
| 0,50 | 50,8000 | 3,75 | 6,7733 | 8,00 | 3,1750 | 19 | 1,3368 |
| 0,75 | 33,8666 | 4,00 | 6,3500 | 8,50 | 2,9882 | 20 | 1,2700 |
| 1,00 | 25,4000 | 4,25 | 5,9765 | 9,00 | 2,8222 | 22 | 1,1545 |
| 1,25 | 20,3200 | 4,50 | 5,6444 | 9,50 | 2,6737 | 24 | 1,0583 |
| 1,50 | 16,9333 | 4,75 | 5,3474 | 10 | 2,5400 | 26 | 0,9769 |
| 1,75 | 14,5143 | 5,00 | 5,0800 | 11 | 2,3091 | 28 | 0,9071 |
| 2,00 | 12,7000 | 5,25 | 4,8381 | 12 | 2,1167 | 30 | 0,8467 |
| 2,25 | 11,2889 | 5,50 | 4,6182 | 13 | 1,9538 | 32 | 0,7937 |
| 2,50 | 10,1500 | 5,75 | 4,4174 | 14 | 1,8143 | 34 | 0,7471 |
| 2,75 | 9,2364 | 6,00 | 4,2333 | 15 | 1,6933 | 36 | 0,7056 |
| 3,00 | 8,4667 | 6,50 | 3,9077 | 16 | 1,5875 | 38 | 0,6684 |
| 3,25 | 7,8154 | 7,00 | 3,6286 | 17 | 1,4941 | 40 | 0,6350 |
| 3,50 | 7,2572 | 7,50 | 3,3867 | 18 | 1,4111 | -- | -- |

Relationship between Diametral Pitch and Module

| Diametral Pitch | Module | Diametral Pitch | Module | Diametral Pitch | Module | Diametral Pitch | Module |
|-----------------|--------|-----------------|--------|-----------------|---------|-----------------|---------|
| 48 | 0,5292 | 13 | 1,9538 | 5 1/2 | 4,6182 | 2 1/4 | 11,2889 |
| 44 | 0,5773 | 12 | 2,1167 | 5 1/4 | 4,8381 | 2 | 12,7000 |
| 40 | 0,6350 | 11 | 2,3091 | 5 | 5,0800 | 1 7/8 | 13,5467 |
| 36 | 0,7056 | 10 | 2,5400 | 4 3/4 | 5,3474 | 1 3/4 | 14,5143 |
| 32 | 0,7937 | 9 1/2 | 2,6737 | 4 1/2 | 5,6444 | 1 5/8 | 15,6308 |
| 28 | 0,9071 | 9 | 2,8222 | 4 1/4 | 5,9765 | 1 1/2 | 16,9333 |
| 24 | 1,0583 | 8 1/2 | 2,9882 | 4 | 6,3500 | 1 3/8 | 18,4727 |
| 20 | 1,2700 | 8 | 3,1750 | 3 3/4 | 6,7733 | 1 1/4 | 20,3200 |
| 18 | 1,4111 | 7 1/2 | 3,3867 | 3 1/2 | 7,2572 | 1 1/8 | 22,5778 |
| 17 | 1,4941 | 7 | 3,6286 | 3 1/4 | 7,8154 | 1 | 25,4000 |
| 16 | 1,5875 | 6 1/2 | 3,9077 | 3 | 8,4667 | .7/8 | 29,0286 |
| 15 | 1,6933 | 6 | 4,2333 | 2 3/4 | 9,2364 | .3/4 | 33,8666 |
| 14 | 1,8143 | 5 3/4 | 4,4174 | 2 1/2 | 10,1500 | .5/8 | 40,6400 |
| -- | -- | -- | -- | -- | -- | 1/2 | 50,8000 |