



## 9.7:1 Metal Gearmotor 25Dx48L mm HP

### Overview

This brushed DC gearmotor is available in high- and low-power versions in a number of gear ratios. Integrated quadrature encoders are also available on certain gear ratios, including just the motor portion by itself (i.e. no gearbox).

| Gear Ratio | No-Load Speed@ 6 V | Stall Torque@ 6 V | Stall Current@ 6 V | <br>Pololu<br>With Encoder |                       | <br>Pololu<br>Without Encoder |  |
|------------|--------------------|-------------------|--------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------|--|
|            |                    |                   |                    | motor without gearbox                                                                                         | motor without gearbox |                                                                                                                  |  |
| 1:1        | 9800 RPM           | 2 oz-in           | 6 A                |                                                                                                               |                       |                                                                                                                  |  |
|            | 5600 RPM           | 1 oz-in           | 2.2 A              |                                                                                                               |                       |                                                                                                                  |  |
| 4.4:1      | 2220 RPM           | 8 oz-in           | 6 A                |                                                                                                               |                       | 25Dx48L mm HP                                                                                                    |  |
|            | 1280 RPM           | 5 oz-in           | 2.2 A              |                                                                                                               |                       | 25Dx48L mm                                                                                                       |  |
| 9.7:1      | 1010 RPM           | 17 oz-in          | 6 A                | 25Dx48L mm HP                                                                                                 |                       | 25Dx48L mm HP                                                                                                    |  |
|            | 580 RPM            | 11 oz-in          | 2.2 A              | 25Dx48L mm                                                                                                    |                       | 25Dx48L mm                                                                                                       |  |
| 20.4:1     | 480 RPM            | 36 oz-in          | 6 A                |                                                                                                               |                       | 25Dx50L mm HP                                                                                                    |  |
|            | 275 RPM            | 24 oz-in          | 2.2 A              |                                                                                                               |                       | 25Dx50L mm                                                                                                       |  |
| 34:1       | 285 RPM            | 60 oz-in          | 6 A                | 25Dx52L mm HP                                                                                                 |                       | 25Dx52L mm HP                                                                                                    |  |
|            | 165 RPM            | 40 oz-in          | 2.2 A              | 25Dx52L mm                                                                                                    |                       | 25Dx52L mm                                                                                                       |  |
| 47:1       | 210 RPM            | 80 oz-in          | 6 A                | 25Dx52L mm HP                                                                                                 |                       | 25Dx52L mm HP                                                                                                    |  |
|            | 120 RPM            | 50 oz-in          | 2.2 A              | 25Dx52L mm                                                                                                    |                       | 25Dx52L mm                                                                                                       |  |
| 75:1       | 130 RPM            | 130 oz-in         | 6 A                | 25Dx54L mm HP                                                                                                 |                       | 25Dx54L mm HP                                                                                                    |  |
|            | 75 RPM             | 85 oz-in          | 2.2 A              | 25Dx54L mm                                                                                                    |                       | 25Dx54L mm                                                                                                       |  |
| 99:1       | 100 RPM            | 160 oz-in         | 6 A                |                                                                                                               |                       | 25Dx54L mm HP                                                                                                    |  |
|            | 57 RPM             | 110 oz-in         | 2.2 A              |                                                                                                               |                       | 25Dx54L mm                                                                                                       |  |
| 172:1      | 57 RPM             | 260 oz-in         | 6 A                |                                                                                                               |                       | 25Dx56L mm HP                                                                                                    |  |
|            | 33 RPM             | 170 oz-in         | 2.2 A              | 25Dx56L mm                                                                                                    |                       | 25Dx56L mm                                                                                                       |  |
| 227:1      | 25 RPM             | 220 oz-in         | 2.2 A              |                                                                                                               |                       | 25Dx56L mm                                                                                                       |  |
| 378:1      | 15 RPM             | 250 oz-in         | 2.2 A              |                                                                                                               |                       | 25Dx58L mm                                                                                                       |  |
| 499:1      | 12 RPM             | 300 oz-in         | 2.2 A              |                                                                                                               |                       | 25Dx58L mm                                                                                                       |  |

Note: At some of the higher gear ratios, these motors can generate enough torque to damage themselves. Any torque greater than about 250 oz-in (18 kg-cm) is likely to damage the gearbox, so we recommend that you avoid stalling the 172:1 HP, 227:1, 378:1, and 499:1 versions of these motors at 6 V.

These motors are intended for use at 6 V. In general, these kinds of motors can run at voltages above and below this nominal voltage, so they should comfortably operate in the 3 – 9 V range, though they can begin rotating at voltages as low as 1 V. Higher voltages could start negatively affecting the life of the motor.

### Details for item #1571

Exact gear ratio:  $(22 \times 22 \times 24) / (12 \times 10 \times 10) = (9.68:1)$

### Gearmotor Dimensions

These gearmotors have output shafts with a diameter of 4 mm. The Pololu universal aluminum

mounting hub for 4mm shafts can be used to mount our larger Pololu wheels (60mm-, 70mm-, 80mm-, and 90mm-diameter) or custom wheels and mechanisms to the gearmotor's output shaft (see the left picture below). These are the same type of motors used in the Wild Thumper all-terrain chassis, and the gearbox's output shaft works directly with the 120mm-diameter Wild Thumper wheels.



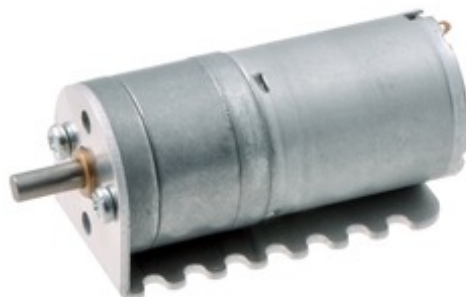
Pololu 60x8mm wheel on a Pololu 25D mm metal gearmotor.



Pololu

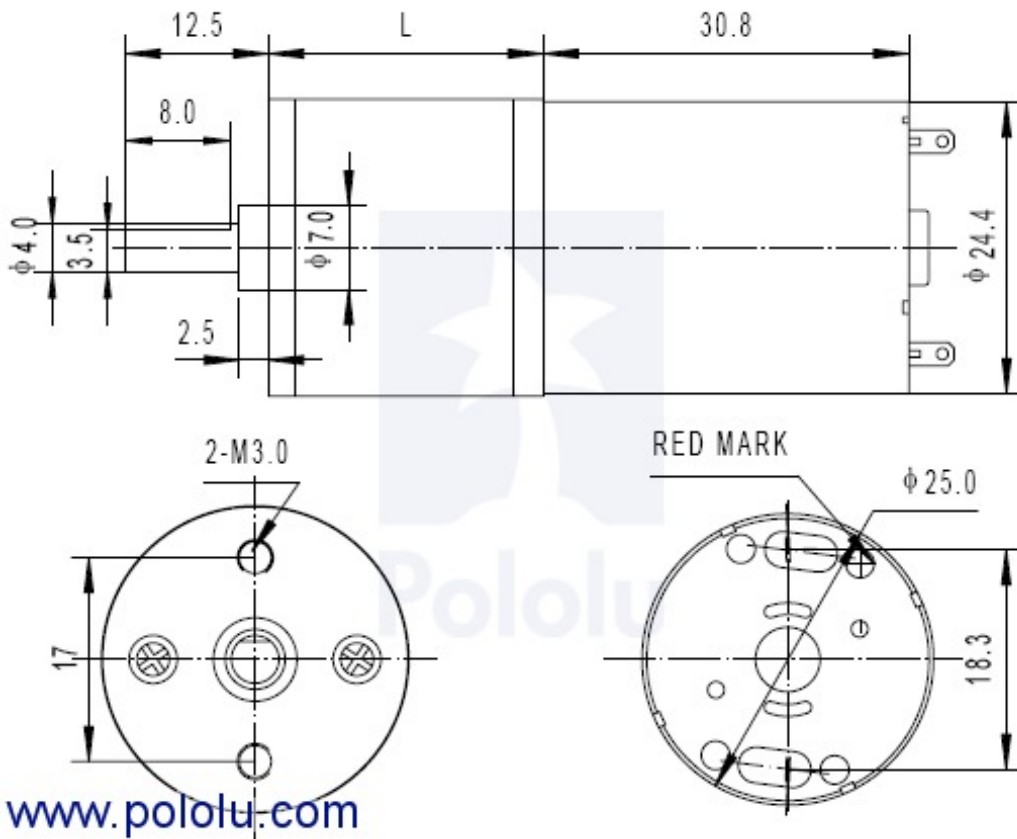
Dagu Wild Thumper wheel 120x60mm (chrome) with Pololu 25D mm metal gearmotor.

The face plate has two mounting holes threaded for M3 screws. You can use our custom-designed 25D mm metal gearmotor bracket (shown in the picture below) to mount the gearmotor to your project via these mounting holes and the screws that come with the bracket.



Pololu 25D mm gearmotor with bracket.

The diagram below shows the dimensions (in mm) of the 25D mm line of gearmotors. The value of L is shown in the table below.



[www.pololu.com](http://www.pololu.com)

| Gear Ratio | L (mm) |
|------------|--------|
| 4.4:19.7:1 | 17     |
| 20.4:1     | 19     |
| 34.147:1   | 21     |
| 75:199:1   | 23     |
| 172:1227:1 | 25     |
| 378:1499:1 | 27     |

Dimension diagram (in mm) for the 25D mm metal gearmotors.

### Selecting the Right Gearmotor

We offer a wide selection of metal gearmotors that offer different combinations of speed and torque. Our metal gearmotor comparison table can help you find the motor that best meets your project's requirements.

[Documentation on producer website.](#)