



## New & Deals

**Bundles Mechanical Electrical View FIRST**  
**All**



**Other options available, see this product and other options here.**



~~\$33.00 — \$35.00~~

## Power Connector

### Select Power Connector



Quantity


[Clear selections](#)
[Add to Cart](#)

[Read Reviews \(18\)](#) | [Write a Review](#)
[Add to Wish List](#)

## Product Overview

The NeveRest Orbital 20 is a gearmotor with an attached encoder. The output shaft geometry and the gearbox housing diameter is similar to what FTC teams are familiar with. The shaft is a 6 mm D and the gearbox housing is 37 mm diameter.

The power cable which feeds into the black encoder housing has two different options that are already crimped to the end of the cable. (select your needs above):

1. NEW for 2020! [JST-VH-2 connectors Option](#): this option plugs directly into the *FIRST* Tech Challenge REV Controller
2. [Anderson Powerpole 15A connectors Option](#)

### FIRST Legality:

- According to the FIRST Tech Challenge Game Manual Part 1, Rule RE10, this is legal for the 2020-2021 FTC Game.
- According to the FIRST Robotics Challenge Game Manual, Rule R27, this is legal for the 2020-2021 FRC Game as it uses the NeveRest am-3104 motor.

### Usage:

- [PicoBox LEO \(am-3614\)](#). This gearbox is used for creating chain drives for mechanisms like arms.
- [PicoBox GEO \(am-3616\)](#). This gearbox combines two orbital NeveRest motors into a single output shaft allowing for combined power at a low ratio.
- [PicoBox MEO \(am-3615\)](#). This gearbox accepts one NeveRest motor and allows for gear changing through PicoBox gearing.

### Encoder:

There is an encoder mounted to the backside of this motor. It is a 7 pulse per revolution (ppr), hall effect encoder. Since the motor's gearbox has a 19.2:1 reduction, then the NeveRest Orbital 20 output shaft provides 134.4 ppr.

### Encoder Cable Options:

NeveRest motors do not come with an encoder cable as we offer 3 cable options:

[am-3926a](#) allows you to connect the encoder directly to the *FIRST* Tech Challenge REV Controller. [am-2992](#) has the 4 encoder pins joined in one housing using standard 0.1" spacing. [am-2993](#) allows you to break out the 4 pins separately if you need them in a different order.

**Working with the Encoders:**

- <https://ftc-tricks.com/dc-motors/>
- <https://www.youtube.com/watch?v=d0liBxZCtrA>

**Performance Specs:**

Time to Failure at Stall: 2 minutes, 54 seconds

Motor Case Temperature at Failure: 190 degrees F

## Specifications

- Back Drive Force: 6.400 oz-in
- Connector Type: JST-VH-2, Anderson Powerpoles
- Free Current: 0.500 AMPs
- Gauge: 18 AWG
- Gear Material: Steel and Plastic
- Material: Steel with Plastic Encoder Housing
- Maximum Diameter: 1.500 in. (38 mm)
- Maximum Power: 14 Watts
- Mounting Geometry: 4x M3x0.5 on a 28 mm Bolt Circle
- No Load RPM: 340 RPM
- Output Shaft Size: 0.240 in. (6 mm) D Shaft
- Overall Length: 5.340 in.
- Poles Per Magnet: 7
- Ratio: 19.2:1
- Shaft Hardness: 45-50 Rockwell C
- Stall Current: 11.500 AMPs
- Stall Torque: 175 oz-in
- Ticks Per Revolution: 537.6
- Voltage: 12 Volts DC
- Weight: 0.991 lbs

## Documents

**CAD File(s)**

[am-3637 NeveRest Orbital 20 Gearmotor REV2.STEP](#)

**Layout Print(s)**

[am-3637 NeveRest Orbital 20 Gearmotor REV2.PDF](#)

**Don't see what you need?**

[See\\_all\\_our\\_guides,\\_drawings\\_and\\_CAD\\_files\\_here](#)

## Returns

Returns are accepted within 30 days of purchase.

View our return policy [here](#).

---

Share



## Recommendations