

## NeveRest 40 Motor (am-2964)



### Product Overview:

The NeveRest 40 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 6mm dia and the gearbox housing is 37mm dia.

### FTC Legal:

According to the *FIRST* Tech Challenge Cascade Effect robot rules, R09b states this: "A maximum total of eight (8) TETRIX / am-2964 motors (in any combination) or eight (8) MATRIX DC motors are allowed and must be controlled by a compatible TETRIX or MATRIX controller."

### Encoder Cable options:

Encoder cables are **not included** with this motor, and are sold separately. We have two options:

1. [am-2992](#) is a cable which has the white 4-pin connector for the encoder and also the black 4-pin connector for the HiTechnic motor controller.
2. [am-2965](#) is a cable which has two of the white 4-pin connectors, one on each end. This cable would need to be modified and a new black 4-pin connector would need to be added in order to mate with the HiTechnic motor controller.

### Encoder:

There is an encoder mounted to the back side of this motor. It is a 7 pulse per revolution (ppr), hall effect encoder. Since the motor's gearbox has a 40:1 reduction, then the NeverRest 40 output shaft provides 280 ppr.

### Specifications:

#### Physical Specs:

- Overall Length: 133.5mm (5.26 in)
- Maximum Diameter: 37mm (1.46 in)
- Output Shaft size: 6mm (0.24 in) with 0.5mm deep flat
- Weight: 0.75 pound
- Mounting Holes: M3 tapped holes, qty. 6, on a 31mm bolt circle
- Electrical Connection Geometry: 6-pin connector for motor power and encoder contact

- Gear Material: Steel
- Body Material: Steel with plastic encoder housing
- Lubrication: Included with gearbox

#### Performance Specs:

- Gearbox Reduction: 40:1
- Voltage: 12 volt DC
- No Load Free Speed, at gearbox output shaft: 160 rpm
- No Load Free Speed, motor only: 6,600 rpm
- Gearbox Output Power: 14W
- Stall Torque: 350 oz-in
- Stall Current: 11.5 amps
- Force Needed to Break Gearbox: 1478 oz-in
- Minimum torque needed to back drive: 12.8 oz-in
- Output pulse per revolution of Output Shaft (ppr): 1120 (280 rises of Channel A)
- Output pulse per revolution of encoder shaft (ppr): 28 (7 rises of Channel A)

#### Performance Specs, mounted to AndyMark dyno:

- Max Speed (under load of dyno): 129 rpm
- No Load Current (under load of dyno): 0.4 amps
- Stall Current: 11.5 amps
- Stall Torque: 396 oz-in
- Max Output Power: 15 Watts
- Time to Failure at Stall: 2 minutes, 54 seconds
- Motor Case Temperature at Failure: 190 degrees F

#### **More Information:**

[Cougar Robotics 4251](#) has done some great research on this motor. [See their notes on our motor.](#)

#### **Captured from**

[http://www.andymark.com/dealoftheday.asp#neveRest?utm\\_source=Deal+of+the+Day&utm\\_campaign=Deal+of+Day+7-21-15&utm\\_medium=email](http://www.andymark.com/dealoftheday.asp#neveRest?utm_source=Deal+of+the+Day&utm_campaign=Deal+of+Day+7-21-15&utm_medium=email) on July 21, 2015