

# Alfa Radio Ltd.

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[www.alfaradio.ca](http://www.alfaradio.ca)

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## AlfaSpid Rotator FAQ

**This document refers to RAK Rotators and ROT1 Prog\_usb Controllers.**

Some answers to commonly asked questions and concerns you may have.....

### *Why doesn't the control box use 120 vac?*

Getting CSA (Canada) and UL (USA) approval for AC line powered devices is a significant adventure. It adds cost and takes time. Not all other brands are UL listed – be aware of the implications. Because 13.8 volt DC supplies are very common it was decided this would be the most effective route to take. A side benefit is that the rotator can now be used in mobile and battery/portable situations. A small 12 volt gell cell battery will be enough to turn the rotator for quite a while. Standby power for the display is under 30 ma.

### *Isn't 13.8 volts pretty low to run over long distances?*

Yes! But it works fine over the typical 100 of 150 foot length of the “average” run of rotator cable. For really long runs, there are simple ways to extend the range. I am turning a rotator 1700 feet away from the shack using #22 telephone wire. See the manual - available online - for more details. For most users simply using a power supply in the 13.8- 18 vdc range will work nicely.

### *How many conductors?*

A total of four. 2 for DC motor power, 2 for pulse sensing.

### *How does it sense position?*

A magnet and a reed switch are built into the motor assembly. A pulse is output for every degree.

### *How fast does it turn?*

Under no or a very small load, the 360 degree rotation time with 13.8 vdc at the motor is about 120 seconds. With 24vdc it is about 60 seconds.

### *What about cold weather operation?*

I've been testing mine at -30C turning a 3 element 40m yagi with no difficulty. The rotator can handle the cold, but your coax may not - at extreme temperatures the PVC jacket on some coax may actually crack, as you rotate the antenna and move the coax loop. With our rotator you can actually put the coax down through the mast and the rotor, eliminating any external coax loop and therefore much less chance of damaging the coax.

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## *Where's the Brake?*

The rotator uses a double reduction worm drive. One feature of a high ratio worm drive is that the output shaft cannot be turned by applying force to it. You can only turn it by turning the input shaft. So, when you remove power from the rotor, the “brake” is applied automatically. When you apply power, the brake is removed the same way. Nothing to stick or bind – or to make noise either. Unlike other popular rotators using brake wedges that only operate in 6-degree chunks, our worm brake holds the antenna at any position.

## *Can it get stuck against a limit switch like my old rotator did?*

**No!** The limits (+ or – 180 degrees of over travel) are electronic and in the control box circuitry. Less to go wrong on the tower.

## *Will it fit inside a Rohn 25 tower?*

Yes! Rohn 25 isn't common up here in western Canada so it took some time to find and test fit it. It's snug and the motor does protrude slightly. The rotator is actually quite compact and the motor is about the only projection that would cause problems in tight spaces. With the pipe mounting system, it is simple to mount the rotator at a height where the motor can stick out between the tower braces. It will fit inside the top section of a 64' Delhi tower (similar to Rohn BX style) which is smaller than Rohn 25.

## *Will it fit outside a Rohn 25 tower?*

It is actually designed to carry the weight of a significant antenna even while mounted outside any tower. Two levels of bearing support are provided between the 2 portions of the rotator.

## *What other towers will it fit?*

From talking with other RAK users, we have determined it will fit:

**TRIX** series LM-470D LM-345E

**US Tower “4” series** like 438 455 472 489 (tight)

**US Tower “5” series** should fit easily

**Rohn 25** (sticks out slightly of Rohn 25 but installs OK without cutting any braces)

**Rohn 45** and up- plenty of room

## *What will it turn?*

A tough question to answer for all situations. Some areas of the world are harder on rotators than others. Simple square footage of an antenna is not a useful rating so we do not offer a specification as it is meaningless and misleading, at best. A small antenna that is very unbalanced will present more of a load than a big, but perfectly wind balanced yagi. The relevant specs are rotating torque and brake torque.

The more important issue is: *What will the brake hold before something breaks?*

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A heavy antenna of the same square footage as a light antenna, has more momentum. Momentum or flywheel effect is hard on brakes. Some flexibility in the mounting system is beneficial. Mounting the rotator using a long mast and/or support pipe (below the rotor) gives a simple way to build some flex into the system. It has the added benefit of transferring the twisting action to a point lower on your tower. Our rating for braking torque is 14,000 lb-inches or 1582 Newton meters.

Rotating torque is in the 1300 to over 3200 lb-inch range, with between 13.8 and 24 volts at the motor. At 24 volts I measured 3240 lb-inches (366 Newton meters) This is significantly more than any rotator in the same price range and even higher than other rotators costing nearly twice as much.

I am turning a 3 element full size 40m yagi at 120 feet.(home brew, 40' boom and quite heavy). This is a significant load, but we typically do not get winds in excess of 100 km/hr here. I'd say the rotator is quite capable of turning a large tribander (KT34XA, TH-11 or similar) or monobander plus a smaller 2 el 40m shorty yagi as a stack. If you have a concern please check with us.

## **Can I mount the rotator on the plate that my old rotator sat on?**

**Yes!** It is simple to fabricate adapter plates with stub pipes to fit the standard hole pattern of other rotors. As well, we have some available already made up.

## **How well does the 8 set screw mounting system work?**

Yes, it is a different system but I find it works well and gives a simple yet effective way to adapt to various size masts. By centring the mast before equally tightening all 8 bolts, it's possible to adjust to a wide variety of mast diameters. Conventional U bolt mast adapters need to be shimmed if the mast size is different than the design size, unless the whole top unit can be shifted as well.

## **Should I pin the mast to the rotator?**

The 8 bolts, when tightened, exert quite a grip on the mast – much better than the typical 2 U bolt clamping system. I don't think pinning is needed. A very soft or thin mast will be deformed by the pressure of the 8 bolts so you may need to reinforce the bottom few inches if this is the case. Even if the antenna slips a bit, it is a simple matter to re zero the control box.

## **How large a mast can it take?**

The rotator can sit on a mast up to 2.63 inches (66.8 mm) and will accept an antenna mast of 2.10 inches (53.3 mm). The standard mast size is typically 1.9 inches (the outside diameter of an 1.5 inch Sked 40 or 80 pipe) or 2.0 inches if using tubing sizes.

## **How to Calibrate the control box?**

Now that you're back down on the ground, it seems True North wasn't really where you thought it was. Simple fix – turn the antenna so it faces what you now think is north (i.e. zero degrees), and reset the

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controller to zero (see manual for full details). The rotator outputs 1 pulse for every degree so no other calibration is needed.

## **How do I find True North?**

An “inside joke” for many of you, I know. ... Don’t mention it on the TowerTalk reflector, but check out the lively, lengthy and repeated archives on this subject at <http://www.contesting.com/FAQ/towertalk>

## **What is the warranty? What is service and parts availability?**

One year, repair or replace at our discretion, FOB Edmonton, Alberta CANADA Alfa Radio will be stocking new motor assemblies and other spare parts as needed, plus complete spare rotors and controllers. In the rare case of something failing, we know you don’t want to be without a rotator very long so we will do everything possible to minimize the down time.

## **What is the price?**

Check our website for current prices or phone

**Compiled and written by Don Moman VE6JY for Alfa Radio Ltd.**  
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