

## The HG-1 Remote Loop Tuner Instructions 8/01/2018

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The HG-1 Remote Loop Tuner is a compact, easy-to-use remote tuner for a Magnetic Loop Antenna (MLA). It is designed specifically as a retrofit for the popular preciseRF HG-1 MLA. Now you can place your HG-1 Magnetic Loop at a remote location, such as the top of your RV, away from obstructions, for better radiation efficiency and less interference. The controller features an efficient, low noise, pulse width modulated, motor controller. The drive motor RPM Rate is adjustable over a very wide range. This allows for precise tuning and low SWR. A custom designed current limiter detects the end of the tuning range and alerts the operator when the tuning limit is reached by a “stall” indicator. In addition, a fail-safe slip clutch mechanism protects the motor and tuning capacitor as well.

Note: Always use a fresh 9V Battery or the optional power supply

Any supplied battery may be partially depleted. While you may get a power light indication, there may not be sufficient battery power to run the motor. We suggest for long term operation use the optional Universal Power Supply 9VDC available from preciseRF

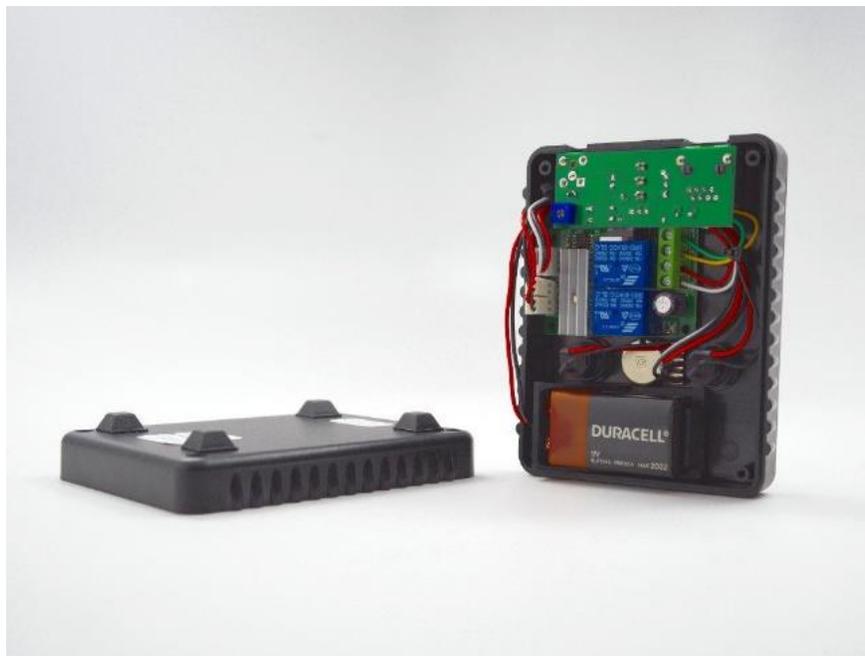
### Installing the HG-1 motor drive assembly

1. Open the existing HG-1 manual tuner case. (Refer to the figure below).
2. Take care not to damage the tuning capacitor by setting the frequency to its lowest setting.
3. Remove the existing knob and pointer (save them for potential future use).
4. Remove the existing mounting screws securing the 6:1 reduction drive (save any spacers or nuts).
5. Remove the temporary nuts securing the two spacers attached to the HG-1 motor assembly.
6. Attach the HG-1 motor assembly to the capacitor shaft.
7. Using the supplied longer #4-40 screws, mount the HG-1 motor assembly to the 6:1 reduction drive.
8. Tighten the set-screws and reinstall the HG-1 manual tuner case back.



### Adjust the torques sensor and replacing the battery

1. The red **Stall** light illuminates when the capacitor has reached the CW and CCW position. Because there is some variation in 6:1 reduction drive torque, the sensor can be calibrated.
2. Refer to the figure below. Open the back of remote tuner case by removing the four screws. Note the blue miniature potentiometer located on the interface board.
3. Set the **Rate** to **Max** and while pressing the **UP** and **Down** buttons adjust blue potentiometer so that **Stall** light illuminates when the Capacitor reaches the CW and CCW ends. It is normal for the **Stall light** to flicker occasionally. (You may have to repeat this adjustment as the 6:1 reduction drive loosens over time).
4. The battery may also be replaced at this time. Battery life depend on type and use. Generally, it should last for extended tuning session. Turn the remote off when not in use.
5. Replace the back cover of the remote tuner being careful not to pinch any of the wires.



### Differences between Manual and Remote Tuning

Using a remote tuner is different than tuning by hand manually. It takes a little practice. When tuning by hand, after selecting the receiver's frequency, the operator tunes for a peak receiver signal. The natural inclination is to tune rapidly for a peak receive signal and then make small adjustments to fine tune and to achieve the lowest SWR. The reason for this method is to be able to hear the peak signal before the receiver's AGC reduces the gain. If you were to tune slowly, you might never notice the increased noise level indicating a peak signal (as is done by a competitor's remote tuner). Fortunately, the HG-1 Remote Tuner features a unique wide range tuning Rate control. It provides the ability to quickly find the antenna resonance.

### Deploying the HG-1 Remote Tuner

1. Make sure the HG-1 Magnetic Loop antenna is placed in an obstruction free area.
2. For better water protection, the HG-1 motor drive assembly may be mounted facing down.
3. Connect both ends of the supplied cable (common Ethernet cable) to the motor assembly and controller.
4. Turn the HG-1 Remote Tuner on; the green SBY LED should illuminate.
5. Set the Rate control to its Max position.
6. While observing the motor assembly, push the red Up or green Down buttons. Note the motor turning CCW or CW depending on the button pushed. This is an indication that the system is correctly connected and everything is in order. If the red Stall LED comes on, that is also OK. It just means you have reached the limits of the tuning range.

### Tuning with the HG-1 Remote Tuner

1. If possible, turn the receiver AGC off or set it to slow; bypass any external or automatic antenna tuner and set the mode to SSB (it's has the loudest background noise).
2. Turn the HG-1 Remote Controller to SBY (on) and set the Rate control to Max.
3. Using the red Up or green Down buttons, tune for a peak receive signal (use your ears or the S meter). The maximum peak will be brief, but obvious. You may have to momentarily push the Up or Down buttons to get close. (The red Stall LED lights if either the lower or upper limits are reached – slight flickering is normal).
4. Once you receive an obvious peak signal, reduce the Rate control and alternately make small adjustments using the Up or Down buttons for the strongest peak signal.
5. Note, when checking SWR, transmit a low power carrier. You should be able to achieve an SWR of 2:1 or better. In rare cases, you may want to use an external tuner to touch up the SWR.
6. Set the receiver to the desired mode and turn the HG-1 Remote Controller off.