

Polaris Drive Controller for GP-Mount (#93820-C)

The GP Polaris Drive Controller is designed to be used with the Great Polaris Mount. In addition to tracking the stars as they move across the sky, this accessory allows you to make small adjustments to the R.A. and DEC axis from a hand controller so you don't have to physically touch the telescope. This is very important in long exposure prime focus astrophotography where an inadvertent bump could ruin a picture. The unit is powered by a single 9-volt battery (not included) which operates the motors for up to 50 hours. This motor drive is used for tracking and guiding only—there is no slewing function. The kit comes with the following:

- R.A. Motor
- DEC Motor
- R.A. Mounting Bracket
- DEC Mounting Bracket
- Two Motor Gears
- Two Shaft (Clutch Assembly) Gears
- Soft Plastic Cover for DEC Motor
- Polaris Drive Hand Controller
- Two Cables
- Mounting Hardware and Allen Wrenches

Read the instructions through once carefully before beginning the installation process. The telescope tube should be removed from the mount while installing the motors for ease of installation. You will need a 1/4" Open End Wrench and a small Phillips type Jewelers screwdriver.

INSTALLING THE DEC MOTOR TO THE BRACKET

1. Locate the DEC motor mounting bracket. It is an "L" shaped bracket with a small lip on one end. (This is the smaller of the two brackets.) Near the lip is a threaded hole to accept the mounting screw.

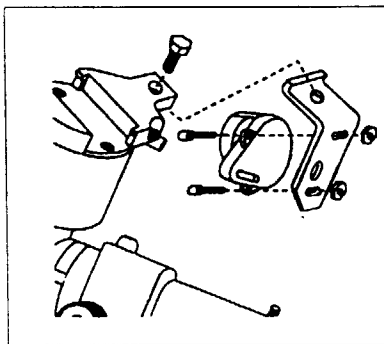


Figure 1

2. Locate the DEC motor. Either motor will do.
3. Place the motor on the inside of the "L" shaped bracket.
4. Orient the DEC motor so that the body (large part) of the motor is opposite the circular cutout of the bracket. The shaft should protrude through the circular cutout.
5. Insert the 4-40x3/8" pan head Phillips screws with washers through the bracket and motor and secure (finger tight) with the nuts provided on the opposite side.
6. Slide the DEC motor gear—hub first—onto the DEC motor shaft. Tighten the set screw on the side of the DEC motor with the .050 Allen wrench.

INSTALLING THE R.A. MOTOR TO THE BRACKET

The R.A. motor will only fit into the motor mounting bracket one way.

1. Locate the R.A. motor mounting bracket. It is a bracket with one large hole and two small slotted holes on one side and a large cutout on the other side. The bracket is symmetrical in that both sides are the same length.

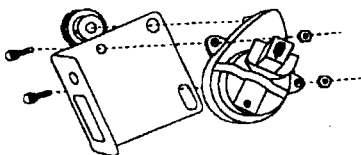


Figure 2

Installing the Right Ascension motor to the Right Ascension bracket.

2. Place the R.A. motor inside the bracket.
3. Insert the R.A. motor shaft through the large hole in the bracket. There are three holes in this side of the bracket; one for the R.A. motor shaft and two (the slotted ones) which accept the screws that hold the motor in place.
4. Insert the 4-40x3/8" pan head Phillips screws with washers through the bracket and motor and secure (hand tighten) with the nuts provided on the opposite side.
5. Slide the R.A. motor gear—hub first—onto the R.A. motor shaft. Tighten the set screw on the side of the R.A. motor with the .050 Allen wrench.

INSTALLING THE DEC ASSEMBLY TO THE MOUNT

The DEC bracket installs so that the gear is on the front of the DEC shaft (i.e., the shaft closest to the objective end of the telescope).

1. Install the DEC shaft gear (clutch assembly)—cam lock out—onto the DEC shaft. Tighten the set screw on the side of the DEC shaft gear with the .050 Allen wrench. If, when using the motor drive, there is no response when pressing the buttons, check to make sure this screw is tight.
2. Slide the portion of the bracket with the lip into the cut out on the top of the mount just below the telescope mounting platform (see figure 1).
3. Insert the 1/4-20 screw through the top of the Mount and thread it into the DEC bracket.
4. Adjust the motor inside the bracket so that the gears mesh properly.
5. Tighten the screws on the side of the bracket to hold the motor in place using the 1/4" open end wrench and a small Phillips screwdriver.

INSTALLING THE R.A. ASSEMBLY TO THE MOUNT

The R.A. bracket will only install so that the gear is on the left shaft (i.e., when standing behind the mount where you would look into the polar axis finder). To make installation of the R.A. motor easier, turn the altitude adjustment knob until the latitude scale indicates 25° to 50°, otherwise the altitude adjustment knob will interfere with the Allen wrench when tightening.

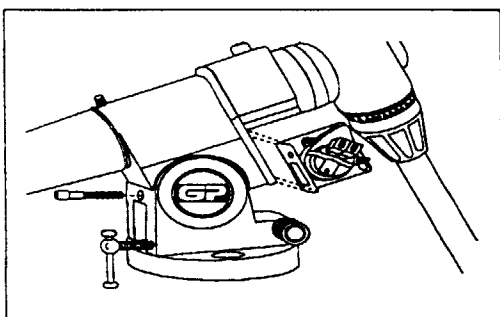


Figure 3

The Great Polaris (GP) showing the installation of the right ascension motor.

1. Locate the plastic cover underneath the R.A. shaft.
2. Remove the plastic cover by removing the small Phillips head screws from the bottom of the plastic cover. Removing the plastic cover reveals a recessed area that will accept the R.A. bracket.
3. Slide the R.A. bracket into the recessed area. The gear on the R.A. motor should be on the left side of the mount (figure 3).
4. Insert the long screw through the back of the mount (just below the polar axis finder) and thread it into the hole on the R.A. bracket. Hint: Have the Allen Wrench inserted in the screw before threading it in.
5. Install the R.A. shaft gear (clutch assembly)—cam lock out onto the R.A. shaft. Make sure the gears mesh well, but not too tight. Tighten the set screw on the side of the R.A. gear with the .050 Allen wrench. If, when using the motor drive, there is no response when pressing the buttons, check to make sure this screw is tight.
6. Tighten the screws in the bracket to hold the motor in place.

You want to detect a little play in the motors. If they are too tight you can damage the motors.

INSTALLING THE CABLES

The Polaris Motor Drive is supplied with two cables. The hand controller has two RJ-11 phone type jacks. To install the cables:

1. Insert one cable into the DEC motor. Insert the other end of the cable into the right jack of the hand controller (when viewed from the top of the drive controller).
2. Insert the other cable into the R.A. motor. Insert the other end of the cable into the left
3. Slide the cover over the DEC motor until snug.

INSTALLING THE BATTERY

1. Remove the battery cover from the back of the hand controller by sliding it down.
2. Locate the wire with the 9-volt battery terminal.
3. Attach a 9-volt battery to the terminal.
4. Slide the battery into the battery compartment.

5. Replace the cover to hold the battery in place.

USING THE DRIVE

To provide power to the motors, push the power switch to the right. The LED on the top right corner of the hand controller blinks and flickers during start up. After a few seconds, the LED will remain constantly illuminated. If the RA jack is not plugged into a motor, the LED will continue to flicker.

Find a suitable guide star and begin guiding. This unit is used for tracking (sidereal rate), guiding (1.3x sidereal rate), and centering of objects (6x sidereal rate). To center an object at 6x sidereal rate:

1. Press the guide button that corresponds to the direction you want to move the telescope.
2. While holding this button down, press the button that for the opposite direction simultaneously. This will activate the 6x sidereal rate.

This works for DEC too at a rate of ~56 arc seconds per second.

To make any manual adjustments to the direction the mount is pointing, you must release the clutch assemblies in one or both axes and move the telescope accordingly.

When you have finished observing, turn the unit off and unplug the cables from the motors. This will ensure that they do not wrap around the mount if the drive unit is not turned off. You want to detect a little play in the motors. If they are too tight you can damage the motors.

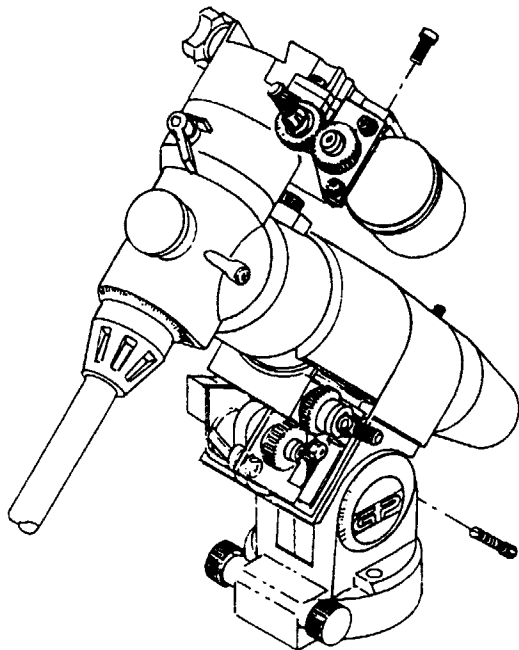


Figure 4
Installed Polaris Drive

SOUTHERN HEMISPHERE SETUP

To operate the Polaris Drive in the Southern Hemisphere, the R.A. drive needs to run in reverse. To do this:

1. Turn off the hand controller.
2. Before turning on the hand controller, hold down the Up and Down arrows.
3. While holding the Up and Down arrows, turn on the hand controller. Keep holding the arrows for about 2 seconds.
4. Let go of the arrows and the R.A. drive will be operating in reverse.

Every time the hand controller is turned off, it resets to the Northern Hemisphere, so this method must be repeated for every use in the Southern Hemisphere.

SP MOUNTS

If you want to attach the Polaris Drive system to an SP mount, contact Celestron Customer Service at 310-328-9560 for the proper brackets. See Figure 5 below.

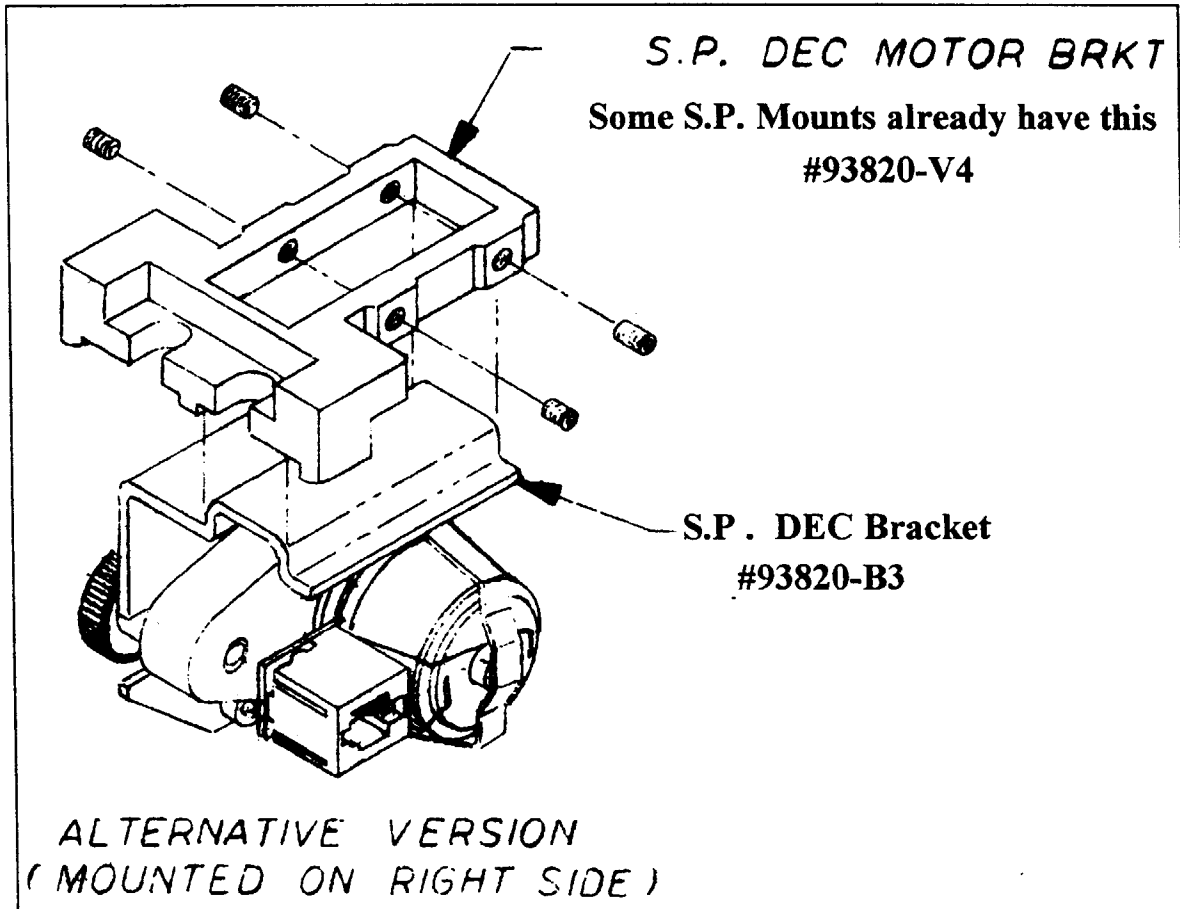


Figure 5

For Super Polaris Mounts, a different 'DEC motor mounting bracket' is needed (#93820-B3). In addition, some of the older S.P. Mounts need the bracket that attaches the 'DEC motor mounting bracket' to the mount itself (#93820-V4).