

Celestron Nexstar GPS 11 Azimuth Axis Disassembly Procedure

This description was written by Lenny Shaffer and complements the earlier description from Adrian C. Richards, which you can also find on this homepage www.dd1us.de

September 10th 2006

THE OLD DISCLAIMER STATEMENT:

**ANYONE ATTEMPTING THIS PROCEDURE IS RESPONSIBLE FOR
WHATEVER DAMAGE MAY OCCUR.**

**I AM NOT RESPONSIBLE FOR FALLING TELESCOPES, BUGGERED GEARS,
LOST PARTS, OR ACCIDENTS CAUSED BY NON-MECHANICALLY INCLINED
INDIVIDUALS OR EVEN MECHANICALLY INCLINED INDIVIDUALS.**

**ATTEMPT THIS AT YOUR OWN RISK KNOWING A SHIPMENT TO
CELESTRON MAY BE IN ORDER IF YOU SCREW UP.**

**READ EVERYTHING SEVERAL TIMES AND STUDY THE PICTURES BEFORE
BEGINNING**

**IN CASE YOU WANT TO REPAIR YOUR TELESCOPE AS DESCRIBED BELOW,
CELESTRON IS OFFERING THE AZIMUTH LEVER AS WELL AS THE SPRING
CLAMP AS SPARE PARTS. PLEASE ASK YOUR DEALER.**

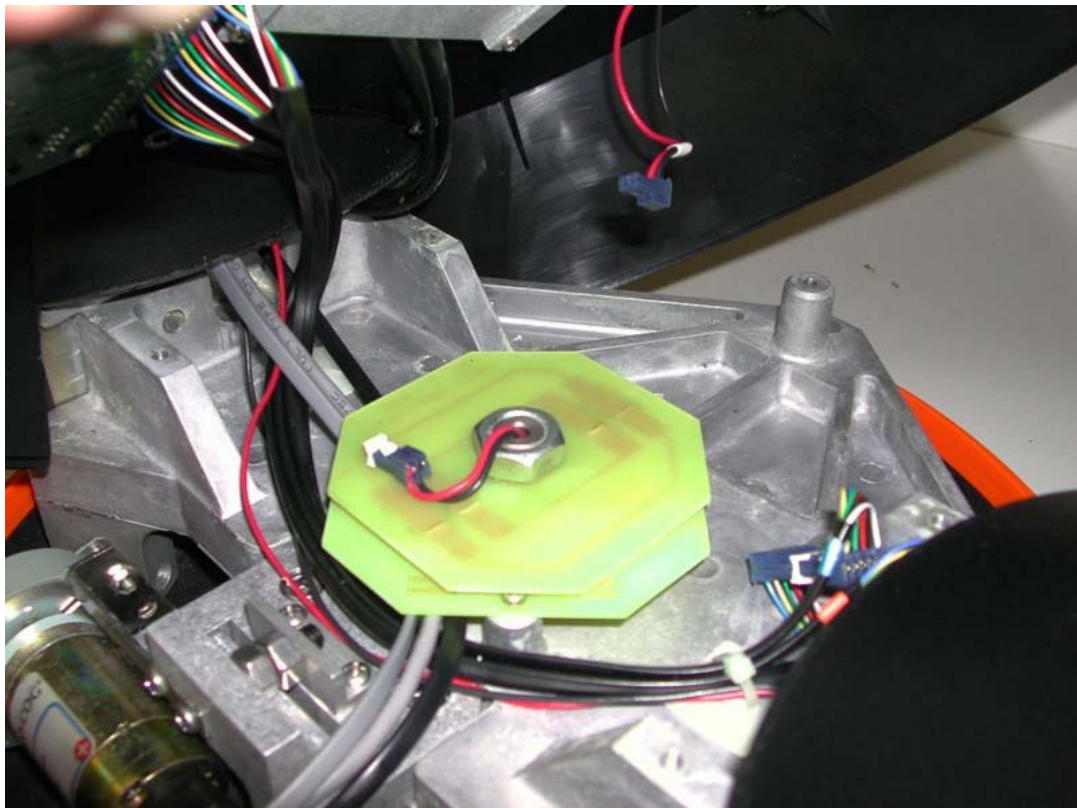
YOU WILL NEED AN AREA SUFFICIENTLY LARGE AND CLEAN TO DO THIS JOB. FIGURE AN AREA FOUR TIMES THE SIZE OF THE SCOPE MINIMUM.

FIRST STEP IS TO REMOVE THE TOP BASE COVER. THERE ARE CABLES FROM THE SERIAL BOARD TO MATING CONNECTORS ON THE AZ ROLLER BASE. THIS WILL REQUIRE YOU TO DISCONNECT THE CABLES FROM THE SERIAL BOARD UNDER THE COVER TO THE CABLES TIED DOWN ON THE AZ ROLLER ASSEMBLY.

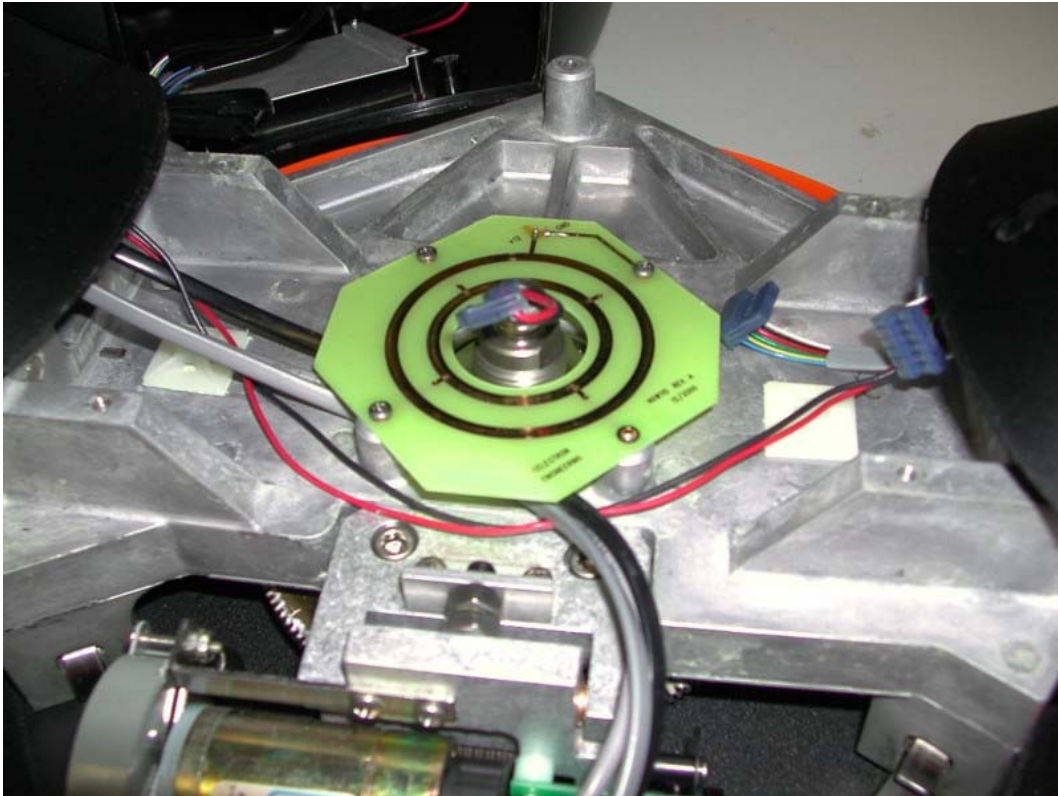
TAKE GREAT CARE WITH THE SERIAL BOARD. IN OLDER SCOPES IT IS NOT REPLACABLE. MESS IT UP AND YOUR BABY WILL BE REQUIRING A TRIP BACK TO CELESTRON FOR A COMPLETE ELECTRONICS REPLACEMENT AT YOUR EXPENSE.

BEST THING IS TO TAG BOTH ENDS OF THE CONNECTORS WITH A PIECE OF MASKING TAPE MARKED "1", "2", AND "3", ETC. I FOUND IT NECESSARY TO CUT THE CABLE TIES HOLDING THE CABLES IN PLACE. YOUR MILEAGE MAY VARY. IT DOESN'T HURT TO TAKE PICTURES WITH A DIGITAL CAMERA BEFORE AND AFTER AS YOU GO ALONG EITHER. ALSO REMEMBER THE ORDER AND PLACEMENT OF PARTS. I LAID MINE OUT ON A PIECE OF NEWSPAPER IN THE WORKROOM AS I PROCEEDED.

DISCONNECT THE SLIP RING ASSEMBLY POWER CONNECTORS. REMOVE THE NUT HOLDING THE UPPER BOARD AND SET IT ASIDE. THE CONNECTOR WILL PASS THROUGH THE NUT.



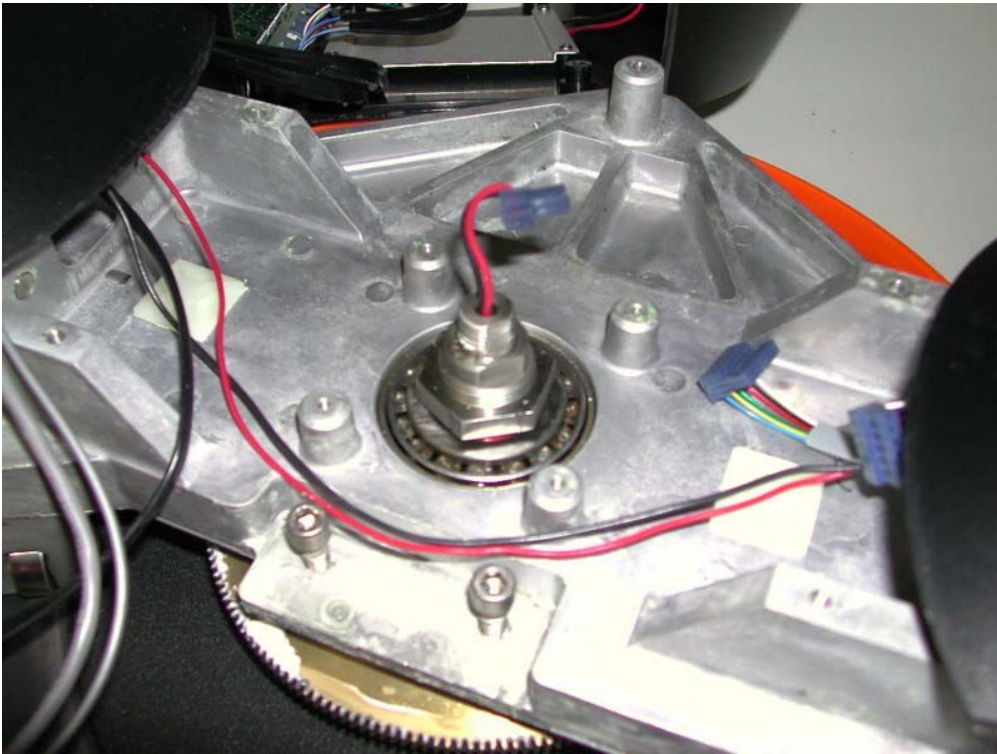
**REMOVE THE FOUR SCREWS HOLDING THE LOWER BOARD IN PLACE.
NOTE THE ORIENTATION ON REPLACING IT**



**THE AZ MOTOR ASSEMBLY HAS TO BE REMOVED IN ORDER TO CLEAR
THE WORMWHEEL...IT JUST MAKES LIFE EASIER. REMOVE THE TWO
SOCKET HEAD SCREWS AND LAY IT OUT OF THE WAY.**



WITH THE SLIP RING ASSEMBLY OFF THE NEXT ITEM IS TO REMOVE THE LARGE NUT HOLDING THE AZ BEARING IN PLACE. NOTE: WHEN REMOVING THIS NUT IT IS LOKTITED ON AND THE TAPRED ROLLER BEARING WILL NEED CLEANING. I FOUND THE BEARING HAD NO GREASE ON IT WHATSOEVER SO AT REASSEMBLY I GREASED IT.

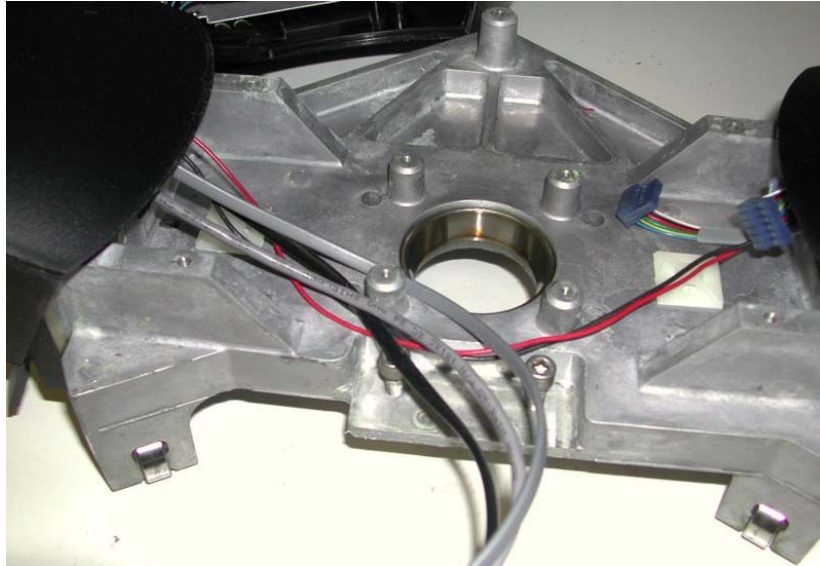


NOTE MOTOR ASSEMBLY REMOVED IN ABOVE PICTURE

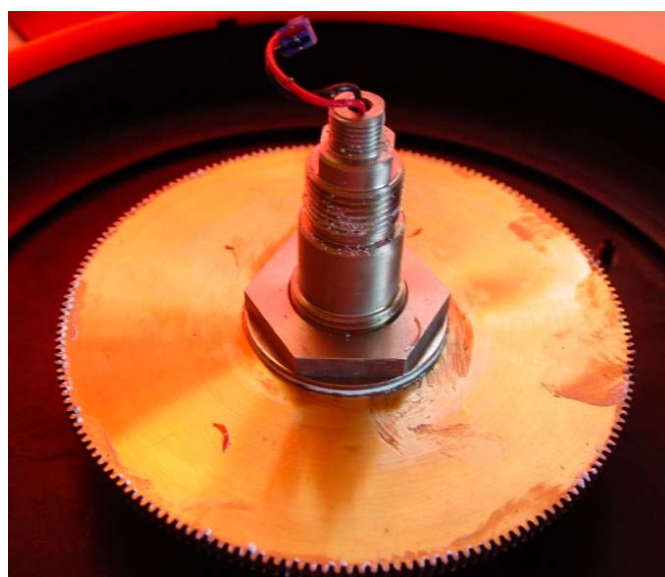
LOKTITE ON SHAFT. MUST BE CLEANED BEFORE REASSEMBLY



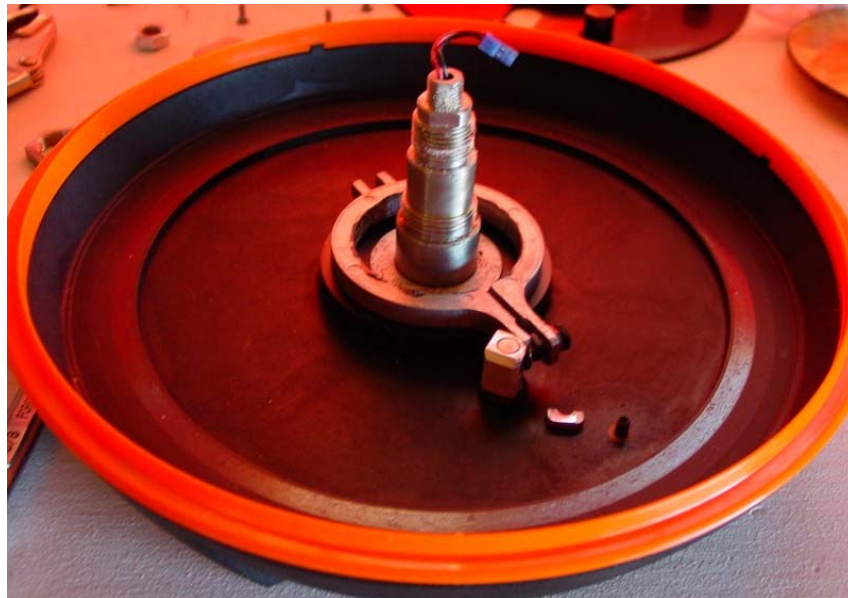
REMOVE THE ROLLER BEARING AND SET ASIDE. AT THIS POINT IT'S BEST TO HAVE ANOTHER PAIR OF HANDS TO ASSIST IN REMOVING THE FORK/OTA ASSEMBLY. LIFT IT UP AND SET ASIDE WHERE IT CAN'T GET BUMPED.



HERE'S THE MOST CHALLENGING ASPECT...REMOVING THIS LARGE NUT. IT'S 1.75" AND MOST PEOPLE DON'T HAVE WRENCHES THAT BIG. YOU DON'T WANT TO USE A PAIR OF CHANNEL-LOCK PLIERS ON IT BECAUSE OF THE POSSIBILITY OF SCRATCHING THE SHAFT OR DINGING THE GEAR TEETH. YOU HAVE SEVERAL OPTIONS: 1. GO TO AN AUTO PARTS STORE AND PURCHASE AN OPEN END BOX WRENCH THIS SIZE. 2. PURCHASE A CRESCENT WRENCH LARGE ENOUGH TO ACCOMMODATE IT. 3. MAKE YOUR OWN WRENCH (MY PATH SINCE I HAVE A BAND SAW AND SOME SCRAP ALUMINUM SHEET). PICTURES SENT ON REQUEST ALTHOUGH I DOUBT MANY CAN DUPLICATE IT. NOTE THIS NUT IS ALSO LOKTITED IN PLACE SO SOME FORCE IS NEEDED TO LOOSEN IT. REMOVE THE NUT AND SET ASIDE.



REMOVE ALL THE PARTS UNDER THE NUT AND SET ASIDE.
REMOVE THE WORMWHEEL AND SET ASIDE.
WHAT YOU ARE LEFT WITH IS THE CLUTCH ASSEMBLY. NOTE THE POSITION AND PARTS PLACEMENT.
REPLACE/REPAIR IF NECESSARY.
AT THIS POINT CLEAN **EVERYTHING** IN THE BOTTOM HOUSING...AZ ROLLER TRACK, AZ SHAFT, HOUSING...**EVERYTHING!** NOTE WHAT WAS GREASED AND WHAT WASN'T. I USED STEEL WOOL ON THE AX TRACK AND FELT IT FOR BUMPS. CLEAN THE BEARINGS ON THE AZ ROLLER ASSEMBLY AS WELL.
AT THIS POINT YOU MAY WANT TO CONSIDER REPLACING THE BASE POWER CONNECTOR THAT GIVES SO MANY PEOPLE FITS. SOME SOLDERING WILL BE IN ORDER SO THAT'S UP TO THE INDIVIDUAL. ALSO YOU WILL NEED TO RE-USE THE SAME SLIP RING CONNECTOR OR FIND A REPLACEMENT. I DIDN'T SO I'LL NOT GET INTO DOING THAT.



REASSEMBLY IS REVERSING THE ORDER OF THIS PAGE. RADIO SHACK SELLS A LUBRICANT CALLED "LUBE GEL" (P/N 64-2326)...THIS IS "SUPER LUBE" REBRANDED AND IS ONE OF THE BEST LUBRICANTS YOU CAN USE. CLEAN THE WORMWHEEL WITH ISOPROPYL ALCOHOL (WALMART SELLS A BRAND THAT'S 90% PURE...~\$0.19 A BOTTLE) AND A STIFF ACID BRUSH (ALSO AVAILABLE AT RADIO SHACK) OR OLD TOOTHBRUSH BEFORE REINSTALLING IT. DRY WITH A LINT FREE RAG AND LIBERALLY REGREASE IT WITH THE LUBE GEL. NOTE: WHEN USING LOKTITE MAKE SURE IT'S ONLY ON THE THREADS AND DOESN'T RUN INTO OTHER PARTS.

NOTE: THERE ARE **NO** TORQUE SPECS AVAILABLE FOR THE SCOPE ASSEMBLY. I CHECKED WITH CELESTRON. ESSENTIALLY IT IS ASSEMBLED TIGHTLY BUT WITH FEEL. ALL THE NUTS SHOULD BE RETIGHTENED SECURELY AND NON-PERMANENT LOKTITE USED. THE

UPPER AZ SHAFT NUT IS AN EXCEPTION. IT MUST BE TIGHT ENOUGH TO SEAT THE TAPERED ROLLER BEARING BUT LOOSE ENOUGH TO ALLOW THE AZ ROLLER ASSEMBLY TO ROTATE EASILY WITHOUT BINDING THIS IS PUT IN PLACE BEFORE THE SLIP RING ASSEMBLY IS IN PLACE.

CLEAN AND REGREASE THE WORM THE SAME WAY YOU DID THE WORMWHEEL. REINSTALL THE AZ MOTOR ASSEMBLY. NOTE THAT ONE OF THE CLEARANCE HOLES IS LARGER THAN THE OTHER ALLOWING ROTATION OF THE ASSEMBLY TO INCREASE OR DECREASE THE PRESSURE OF THE WORM AGAINST THE WORMWHEEL. INFORMATION I RECEIVED YEARS BACK FROM ED BYERS (OF BYERS GEARS FAME) RECOMMENDED ~.0001 CLEARANCE BETWEEN THE TWO. THE SUGGESTION WAS TO USE A PIECE OF SARAN WRAP AS A GAUGE. PERSONALLY I'M A LITTLE LEERY OF POSSIBLY LEAVING A SMALL HUNK OF PLASTIC FILM STUCK IN THERE SO I JUST PLACED IT AGAINST THE GEAR AND RETIGHTEND THE SCREWS. THE ACID TEST IS WHETHER THE MOTOR BINDS WHEN SLEWING. THE SOUND OF YOUR SCOPE IS WHAT YOU WILL HAVE TO REMEMBER FROM BEFORE AND AFTER.

RECONNECT THE CABLES FROM THE SERIAL BOARD AS REQUIRED AND MAKE SURE THEY WILL NOT INTERFERE WITH THE ROTATION OF THE SCOPE. NOTE: MY SCOPE IS PERMANENTLY PIER MOUNTED SO I LEFT THE SLIP RING ASSEMBLY OFF AND REPLACED THE CONNECTORS. THIS ASSEMBLY IS TO PREVENT CORDWRAP OF THE POWER CABLES. SINCE MY SCOPE CAN ONLY ROTATE +/-90 DEGREES THERE IS NO NEED FOR IT. THE CHOICE IS YOURS.

REINSTALL THE BASE COVER, POWER THE SCOPE AND TEST THE SLEWING USING THE HAND CONTROLLER. IF THE MOTOR SOUND OK YOU'RE DONE. IF IT SOUNDS LIKE IT'S BINDING THEN READJUST THE WORM TENSION.

**WARNING!
READ YOUR WARRANTY FIRST!
IF YOUR SCOPE IS STILL UNDER WARRANTEE AND YOU DO ANY
DISASSEMBLY IT WILL VOID THE WARRANTY!**

That being said, the non-warranty price quoted by Celestron Inc. USA for the parts are as follows: Azimuth Lever \$21.00, Ring Clamp \$11.00, S & H \$5.00

Many thanks to Lenny for allowing me to post this excellent article on my Homepage.

Best regards

Matthias

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