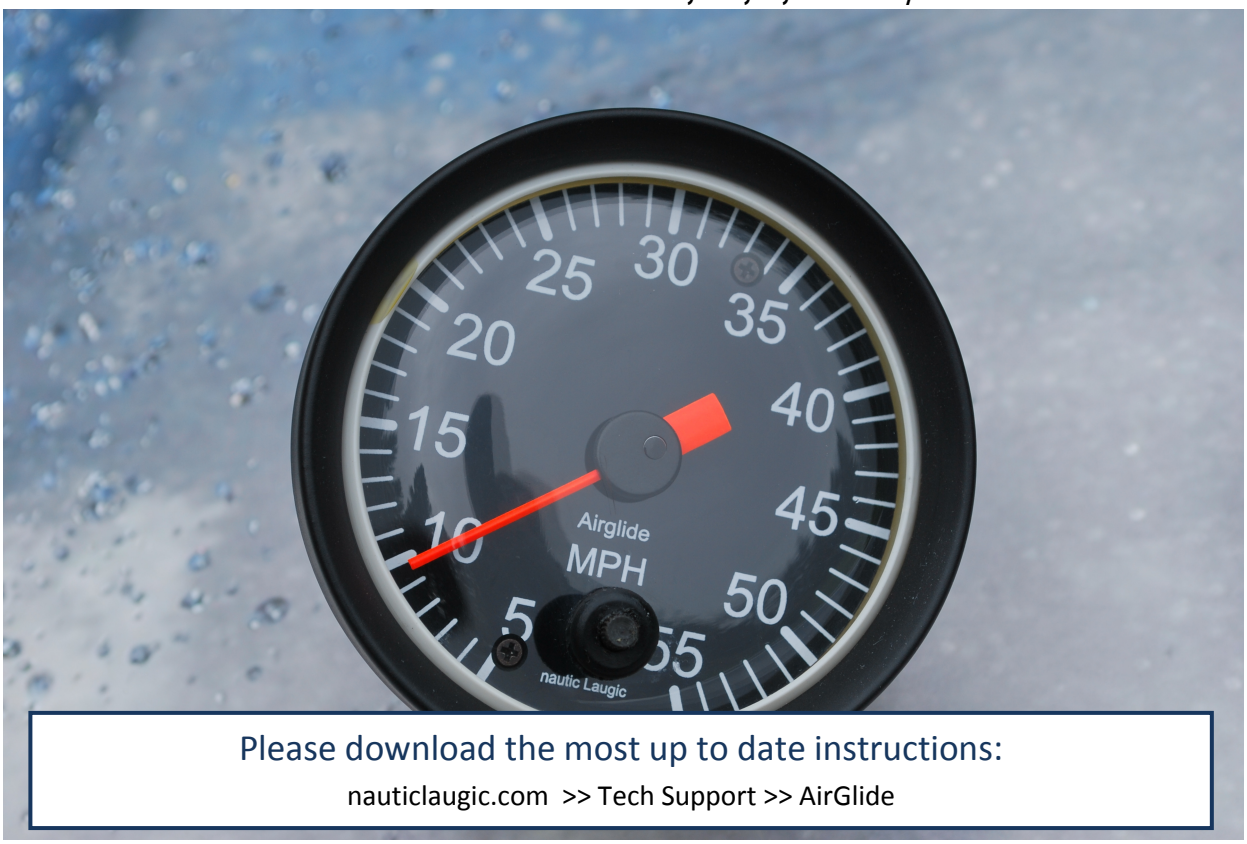
The AirGlide Internal GPS Upgrade for:

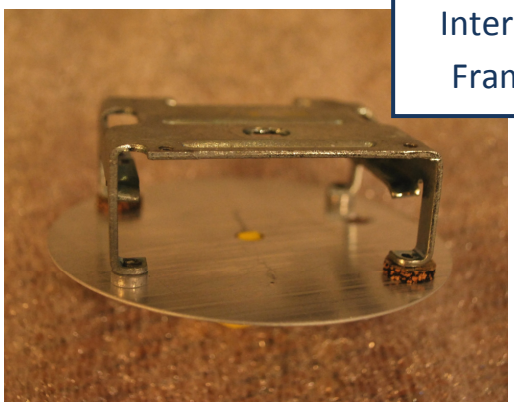
AirGuide Model 2025 w/ a metal internal frame

This Kit includes all the components necessary to upgrade the Pitot driven speedometer to GPS.
The finished gauge will mount exactly has it did originally. The integrated Backlights are life-time LEDs.
This document outlines the step-by-step conversion procedure and installation.
***** This retrofit is NOT intended to work with the original gauge dial... only the new dial is used.**

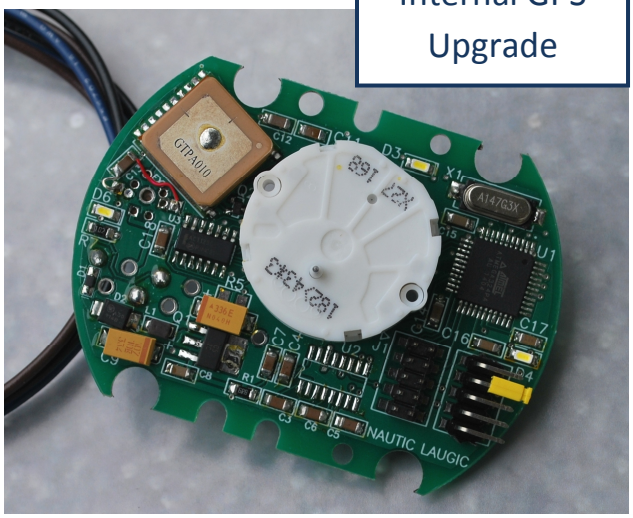


Please download the most up to date instructions:
nauticlaugic.com >> Tech Support >> AirGlide

Metal Internal Frame



AirGlide Internal GPS Upgrade



The AirGlide Kit, Tools, and Prep

Contents:

QUANTITY	DESCRIPTION
1	AirGlide Retro-fit Assembly (AGR)
1	Dial, 5-to-55 MPH
2	Screw, FltHd, #2-56 x 3/8"
2	Nut, #2, Nylon, White
2	Screws, #4-40 x 5/16", Socket Hd, SS
2	Nuts, #4, SS
1	Grommet, Rubber

General Small Tools and Material Required:

DESCRIPTION
SCREW DRIVERS: PHILLIPS (#0-0, #1, #2) / SMALL FLAT-HEAD (2)
PLIERS: NEEDLE NOSE / STANDARD
ASSORTED NUT DRIVERS
ASSORTED WRENCHES
DIAGONAL CUTTERS
FLAT FILE (COURSE AND FINE)
DRILL MOTOR; DRILL BITS
SOFT CLOTH, MASKING TAPE, WINDOW CLEANER, Gorilla Glue GEL

Prep: This Is VERY Important!

Rotate the AGR motor shaft to its full counter-clockwise (CCW) stop.

1. Grasp the AGR board edges in your left hand with the motor facing you. Pinch the rotor shaft with your right thumb and index finger.
2. Hold the pinched shaft stationary, rotate the AGR board 90 degrees CW (and thus the rotor turns CCW). Note: The rotor movement is so smooth, you're unlikely to sense it.
3. Release your pinch on the rotor. Re-Cock the AGR to rotate it CW again.
4. Repeat steps 1 thru 3, four to five times.

Jumpers: This Is VERY Important! Only insert the AGR Jumpers (at J2) when instructed to do so.

Disassembly

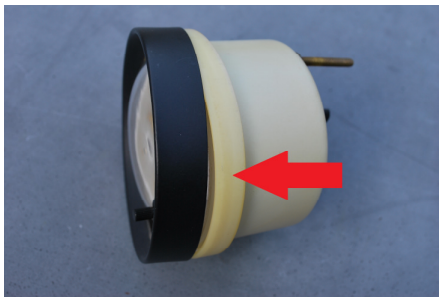
Begin with the gauge removed from dash: Thereby, free the Pitot hose (cut if necessary). Remove the Backlight, by pulling it from the case. And remove the mounting bracket.

*** Remember to always protect the Lens Face with a soft cloth or pad to avoid scratches.

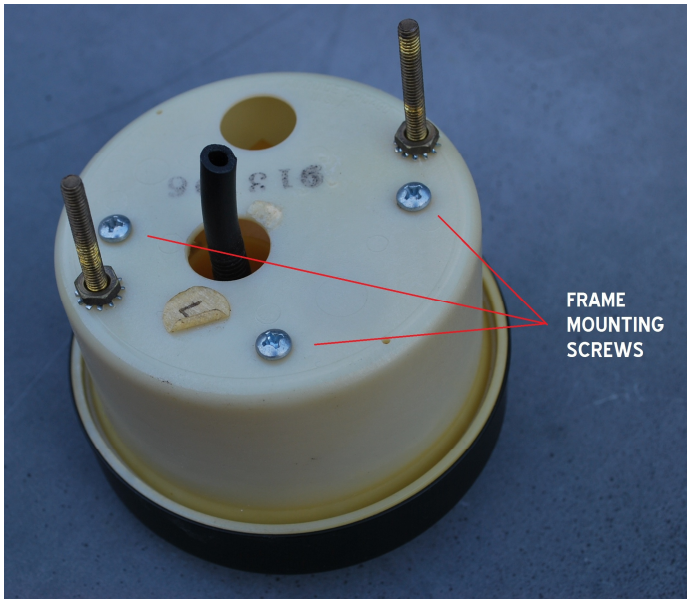
*** Refrain from discarding removed parts! Some are reused.

*** This process is irreversible. For some mechanical parts are ruined as to expedite and ease the upgrade procedure.

*** FOR BEST RESULTS, READ THE ENTIRE PROCEDURE FIRST!



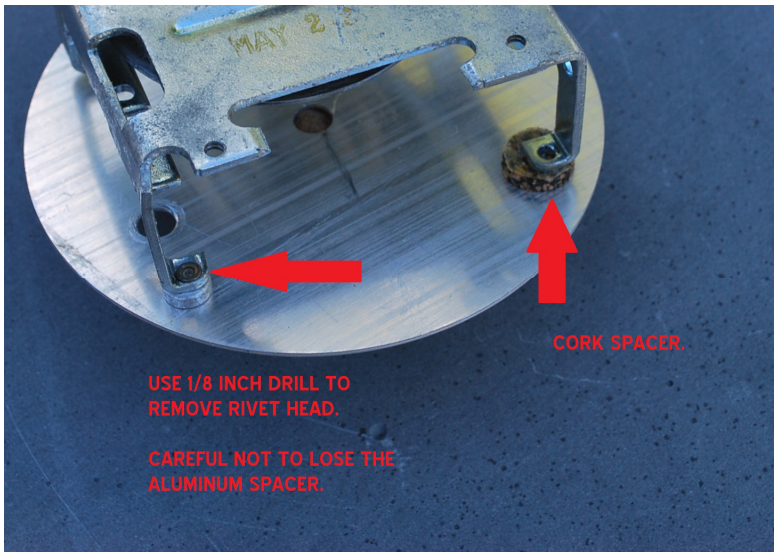
1. With your fingers, gently pry/slide the bezel off.
2. Remove the Frame Mounting screws; use a #2 Phillips screwdriver. The screws are threaded into frame posts which support the internal frame. Remove all three screws.
3. From the front, remove the entire dial from the case: this includes the Lens, Lens Gasket, Dial and plastic frame.
4. Slide the Lens/gasket up and off the Adjustment screw.



5. Pry the indicator needle loose from the rotor:
    a. To protect the dial face, place 2 masking tape strips under the needle, on opposite sides of the rotor.
    b. Near the rotor, slide two small flat head screwdrivers under the needle from opposing directions. With their blades flat on the tape, gently twist/pry the screwdrivers shafts up to release the needle.

6. Separate the Dial from the frame.

    a. Pull the two Cork Spacers out from between the Dial belly and Frame. Save for later.
    b. Release the old Dial from the metal frame by using an 1/8" drill bit to drill off the rivet belly... drilling from the backside with the dial/frame assembly upside down, resting on a flat stable service, gently remove the rivet head with the drill. Be Very careful not to lose the round aluminum spacers held by the rivets!
    c. Remove the Dial and old rivets.
    d. Turn the Adjustment Screw Counter-Clockwise to Remove it.



The internal mechanism pictured is not exactly the same, and is shown for reference only.

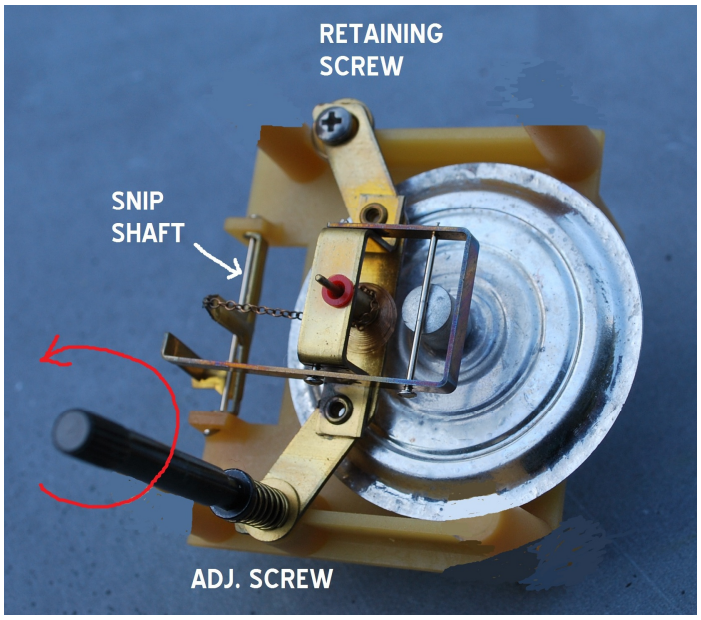
7. Now evacuate all the pressure-mechanical components from within the frame... done without separating the dial from the frame.

    a. Using Diagonal Cutters, snip the spindle shaft, and remove.

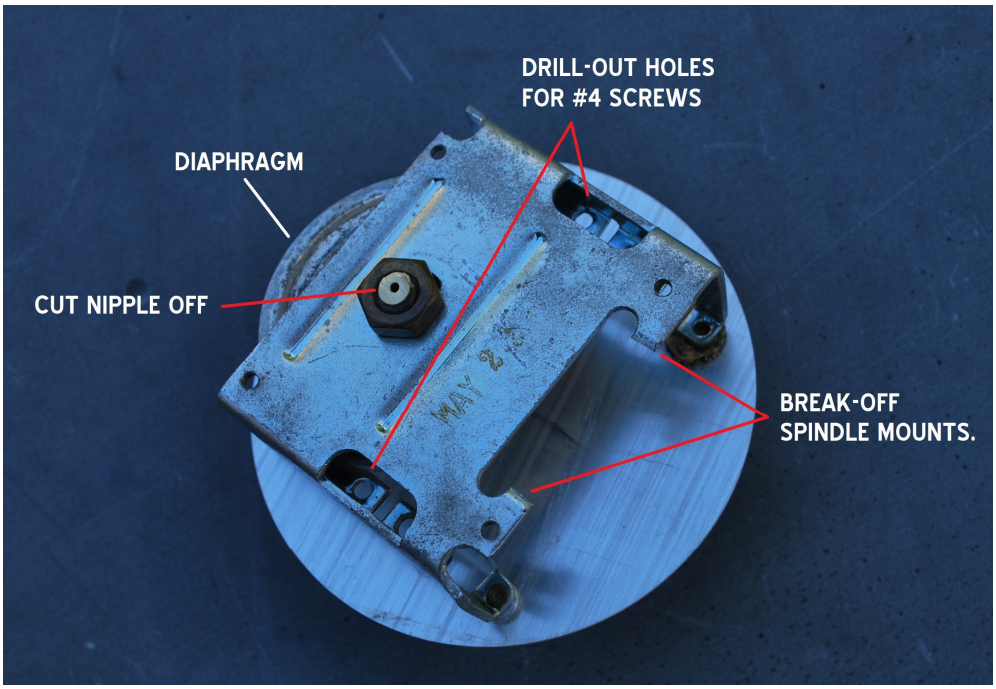
    b. Find the Retaining Screw and remove it.
    (The screw head may be hex shaped).

    c. Grasp the diaphragm with pliers, and loosen the nut with a 7/16" wrench.

    d. Pull diaphragm out of the frame.



8. Frame modifications:



e. Drill-out the two center mounting holes to 1/8" diameter: see picture. File any raw edge smooth.
f. Using pliers, flex the Spindle Mounts back-and-forth until they break off. File off any sharp edges.

9. Clean the Case.

Assembly

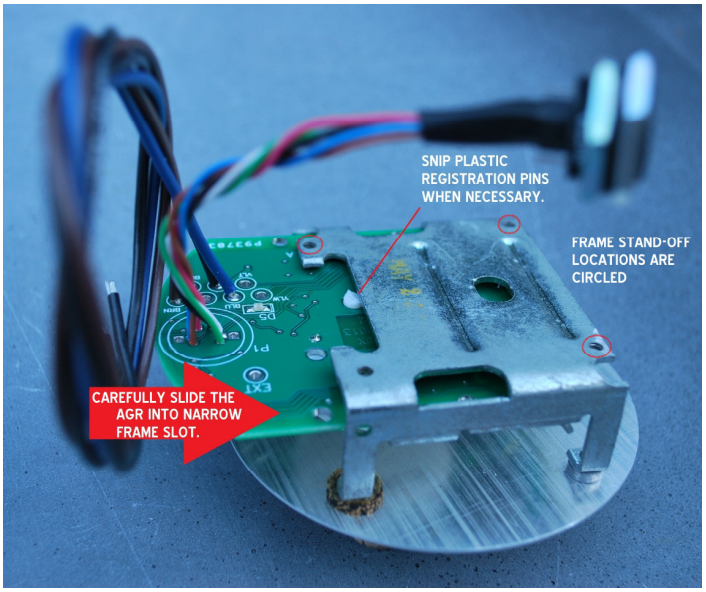
1. insert and seat the rubber grommet into the old Backlight hole.

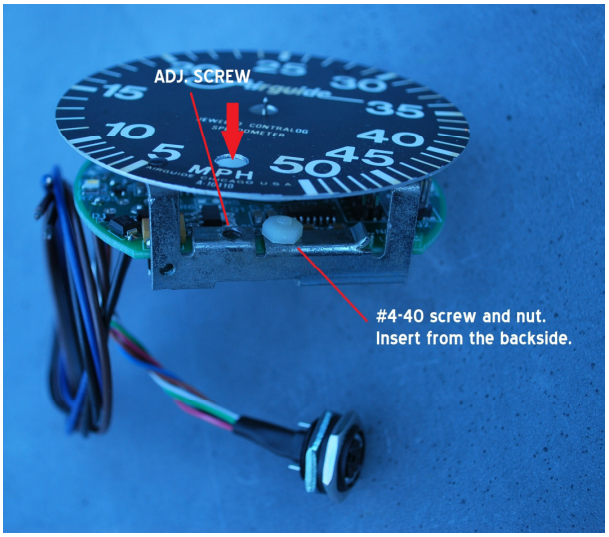
2. Ensure the case Mounting-bracket studs are secure. When necessary tighten the nuts with a ¼" nut-driver.

3. Attach new Dial Face.

    a. If needed, countersink the Dial face mounting holes to receive a #2 Flathead screw. The top of the screw should sit flush with the Dial face as to not interfere with the needle/pointer movement.
    b. Gently remove the protection paper from the new Dial surfaces.
    c. Place the New Dial on the Frame, properly registering the mounting holes and Adjustment arm. Lift the Dial and carefully sandwich one aluminum spacer between the Dial and Frame.
    d. Insert a #2-56 x 3/8 Flathead screw in a mounting hole, thru the spacer and Frame. Slightly skew the screw tail away from the Frame mount and start the nylon (plastic) nut; use a pair of needle-nose pliers to hold the nut.
    e. Place the spacer and do the same for the other mounting hole.
    f. Tighten the nuts until they bind securely into the frame holding the dial snug. Do Not over-torque the screws and strip the nylon nuts.
    g. Apply a little silicon gel to one side of a cork spacer. Re-insert it between the Dial belly and one of the two open Frame fingers with the silicon against the Dial belly.
    h. Do the same for the second cork spacer.

4. Point the dial face away and orient the frame's old spindle mount to the left; see picture. With Motor pointed towards the Dial's backside, from the left, start the AGR into the frame's narrow back slot. Continue to slide the AGR in being careful not to bend/tweak the rotor. Snip the plastic motor registration pins as needed for clearance. Stop when the rotor protrudes thru the dial's center hole.





5. From the backside, insert the two #4-40 x 5/16" screws thru the AGR's center slots and the frame holes. Thread on the #4 nuts. Visually confirm the rotor is centered on the dial, and tighten.

6. Thread the spring and washer onto the Adjustment Arm, and screw in; it should align/protrude into its AGR 'relief' hole.

7. Thread the three hex stand-offs back onto the Frame; Note: find the correct frame holes to align with the Case holes.

8. Attach the needle indicator.
    a. The needle should be a snug press-fit on to the rotor. If the needle easily slides onto the rotor and spins freely, do the following…
        i. adhesive is required: Gorilla Glue GEL.
            1. With a Tooth-pick, add a minuscule dab of adhesive, to 'blob' the rotor tip. Allow the blob set or get 'tacky' (10 seconds); avoid excess that will run down the shaft and inhibit it from turning.
    b. With the needle pointed towards 15 MPH. Partially start the needle onto the rotor shaft.
    c. Rotate the needle CCW until it is pointed at 7 MPH.
    d. Press the needle fully onto the shaft, and rotate CCW till it's EXACTLY centered on 5 MPH.
    e. Stand the assembly upright, level-flat, so gravity won't draw the needle off 5 MPH.
    f. Allow the adhesive to cure before proceeding!!!.
    g. ***Note: only if you have convenient access to 12 VDC Power, double-check the needle registration to the dial; see Registration Test and FINE TUNE Calibration addendum. This is done before continuing the assembly procedure.

9. Feed the BRN/BLU/BLK wires thru the rubber grommet.

10. Fasten the Frame/Module/Dial assembly to the case:
    a. Align the 'legless corner of the frame over the grommet, and slide the assembly into the case.
    b. Start each frame mounting screw thru the case backside and into a frame standoff. As required, slightly rotate the frame assembly to align each standoff with a hole.
    c. With all three screws inserted, press the frame assembly squarely into the case bottom, and center.
    d. Tighten the screws.

11. Carefully clean the dial free of any fingerprints or smudges.

12. Clean the Lens and Lens gasket.

13. Place the gasket over the case and dial.
    (Note the correct orientation is pictured in Disassembly step 4.)

14. Slip the Lens over the Adjustment screw, and into place.

15. Slide the Bezel back on.

Your AirGlide Speedometer is READY for Power.

Electrical Install

1. Return the Speedometer to the Dash. Feed the wires thru the dash front.

2. Mount the Speedometer.

3. Provide a source of CLEAN (Noise-free), Key-switched +12Vdc Power. Tap into power that ISN'T directly feeding a Pump, Starter Motor, or etc. Note: This may entail adding a new accessory 18 Awg power wire onto the Key Switch. And possibly upsizing both power wires (Pos and Neg) from the Battery to the dash area.

    a. Bond the Brown wire to Switched Power (+12Vdc).
    b. Bond the Black Wire to Common/GND/Battery Neg. (DO NOT USE the BACKLIGHT COMMON!!)
    c. Remove the Existing Backlight, and bond the Blue Wire to Backlight Power (+12Vdc).

4. Note: the internal Backlights are also controlled by the AirGlide. Therefore, the AirGlide must be powered in order for the Backlights to come on. Also as a useful status indicator the Backlights will Flash while the AGR is waiting for a 'satellite-sync'. To witness the flashing, the dash lights must be ON. **This is by design**! For under normal conditions visual feedback from the AirGlide becomes routine and unnecessary. Thus, the user has ability to enable/disable these visible cues by turning the dash lights On or Off. Upon power-up, the AirGlide waits 2 seconds for the power to settle.

PITOT HOSE: REMEMBER TO PLUG/CORK/PINCH-OFF THE HOSE, TO AVOID WATER LEAKING INTO YOUR BOAT!!

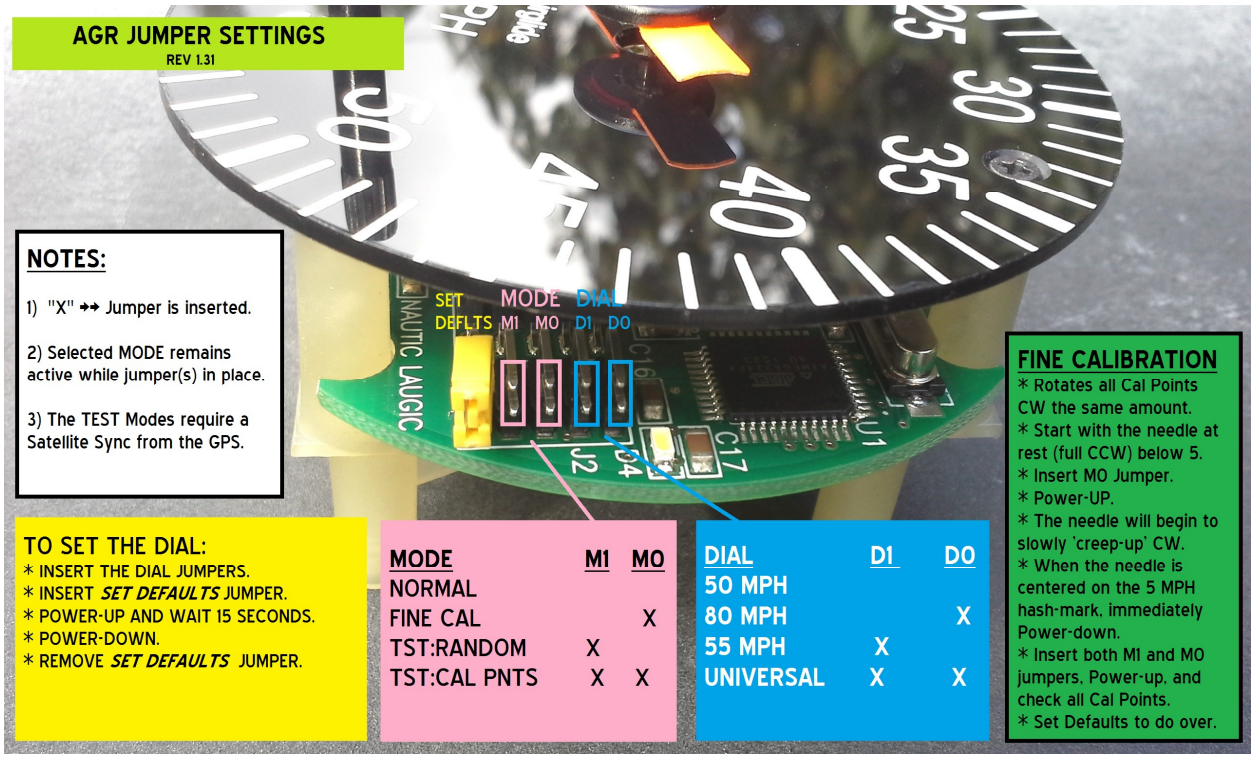
Warranty

Nautic Laugic warranties the AGR for one year.

Should this product malfunction or fail, please return it so we can make it right!! Please see our policies page at www.nauticlaugic.com

THANK YOU FOR BUYING OUR PRODUCT!!

Addendum: Registration Test and Fine-Tune Calibration



1. Attached the BROWN and BLUE WIRES to a switched +12VDC source (Battery, power supply.) Connect the BLACK WIRE to the negative (common) side of the power source… DON'T ENERGIZE JUST YET.
2. Insert Jumpers at both MO and M1… this will set the MODE to TEST: CAL POINTS.
3. Power-up and wait for the GPS to Satellite Sync; (the backlights will stop blinking).
4. Observe the Needle move and rest at each target hash mark (multiples of 5), between 10 and 50 MPH. This test repeats indefinitely. (The starting hash mark is arbitrary, and varies by the GPS's ability to sync.)

   Proper Needle registration ➔➔ the needle lands within the envelope of each target hash mark. Attaining a perfect registration is unlikely, so apply a 'best-fit' mindset.

   End the test by removing the power. Remove all the Jumpers.
5. Should the Needle consistently overshoot (go past) each hash mark, redo Assembly step 8 (reapply needle).
6. Should the Needle consistently fall short of each hash mark, then proceed with the following ***Fine Tune:***
   a. Insert only the MO jumper… this will set the mode to *FINE CALIBRATION.*
   b. Apply Power, and observe the Needle slowly rotate upward from the full CCW (stop) position.
   c. Immediately remove power when the Needle is centered on the 5 MPH hash mark.
   d. Go to Step 2, and retest.
   e. Dissatisfied with the Fine-Tune result; Start over by Setting the Dial back to Defaults (follow the procedure in the yellow box), then begin again at Step 6a.