Anemometer Kit Assembly Instructions

Parts List

Before you start construction of your anemometer please make sure you have all of the parts you need. If you find any part missing please contact APRS World and we will mail the missing part to you as soon as possible.

All Kits

Quantity	Description
3	Aluminum wind cups, 2.5" (63.5mm) diameter (weight matched set)
1	Magnetic reed switch 1.5" (38.1mm) long, 5/16"-24 with hex nuts
2	Magnets, 1/2" (12.7mm) diameter (epoxied into 2" PVC cap)
1	Nylon Spacer, 1/2" (12.7mm) OD, 0.25" (6.35mm) ID, 1" (25.4mm) long
1	PVC cap, 2" schedule 40 pipe (precision drilled and tapped)
1	PVC cap, 1.5" schedule 40 pipe (precision drilled)
12	#8 nylon washers (UV resistant)
1	Ball bearing, 1/4" (6.35mm) ID, 3/4" (19mm) OD, shielded (epoxied into 1.5" PVC cap)
1	1/4"-20 cap screw (bolt), 1.75" long, stainless steel
1	1/4"-20 acorn nut, stainless steel
2	Custom spacer (washer), 0.355" OD, 0.260" ID, 0.040" thick, stainless steel
3	#8-32 machine screw, 4" long, stainless steel
15	#8-32 hex nut, stainless steel
6	#8 internal tooth lock washer, stainless steel
1	Loctite #222 thread locker packet
1	RJ-45 connector board soldered to magnetic switch
2	#6-32 machine screw, 1/4" long

2	Spacer, #6-32 female, 1/4" Hex, 0.75" long, Aluminum (pre-pressed into 1/5" PVC cap)
1	PVC pipe, 1.5" trade size, 5" long

Recommended Tools

To make your kit assembly easier we recommend you have the following tools available:

- Flat screwdriver, #2 (medium size)
- 9mm end wrench
- 7/16" nut driver or 7/16" socket, ratchet, and extension

Assembly Instructions

Build the rotating assembly:

- The wind cups secure to the 2" cap using 4" long #8-32 machine screws. Slip a #8 nylon washer on a 4" screw then push the screw through one of the holes into a wind cup. Slip on another #8 nylon washer, then thread two #8 hex nuts about 1.5" on the screw. Slip on another #8 nylon washer, then push the screws through the other hole and out of the wind cup. Slip another #8 nylon washer on the screw and thread another #8 hex nut on the screw. Your assembly should look the sectional view on the last page of this manual.
- Put a tiny amount of Loctite on the screw threads, then use your 9mm wrench to tighten the nut next to the head on the screw. You should use your flat screw driver to prevent the screw from turning. Be careful not to use excess Loctite, as it may make the nylon washers brittle. Apply a tiny amount of thread locking adhesive on the screw and tighten the two remaining nuts to clamp the wind cup in place. The wind cup should flatten *slightly* around the nuts.
- Repeat these two steps for the other two wind cups.

If the wind cups are oriented on the 2" cap so that the cap rotates clockwise (when viewed from above) the tendency will be for the cap screw to tighten on the mounting bolt (rather than unscrewing). We recommend this orientation.

- To attach a wind cup to the 2" cap, thread a #8 hex nut about 1/2" (12mm) on a 4" screw, then slide on a #8 internal tooth lock washer. Thread the screw into one of the holes on the side of the 2" cap. On the inside of the cap, slip a #8 internal tooth lock washer onto the screw, then thread on a #8 hex nut. **Adjust the screw so the <u>end</u> of the screw is <u>flush</u> with the side of the nut**. If the screw extends beyond the nut it may rub on the

stationary cap.
- Remove the inside nut. Apply a tiny amount of Loctite to the screw for both the inside nut and outside nuts. Again install the inside nut and make sure the end of the screw is flush with the side of the nut. Tighten both the inside and outside nuts onto the cap so that the wind cup is secure. Adjust the wind cup so it is vertical.
- Repeat these two steps for the other two wind cups.

Install and adjust the rotating assembly:

- Set the rotating assembly on a table and use a square to adjust all three wind cups as necessary so they are exactly vertical.
- Remove one plastic nut from the magnetic switch. Adjust the remaining nut to about 3/4" (19mm) from the end of the magnetic switch. Install the switch through the hole in the 1.5" cap with a **flat side** of the nut adjacent to the side of the cap. Adjust the nut position as necessary so that the switch extends 1/2" (12.7mm) beyond the end of the cap. Secure the magnetic switch in place with remaining plastic nut, tightening **gently**. Do not use Loctite on the sensor as it will make further adjustments impossible!

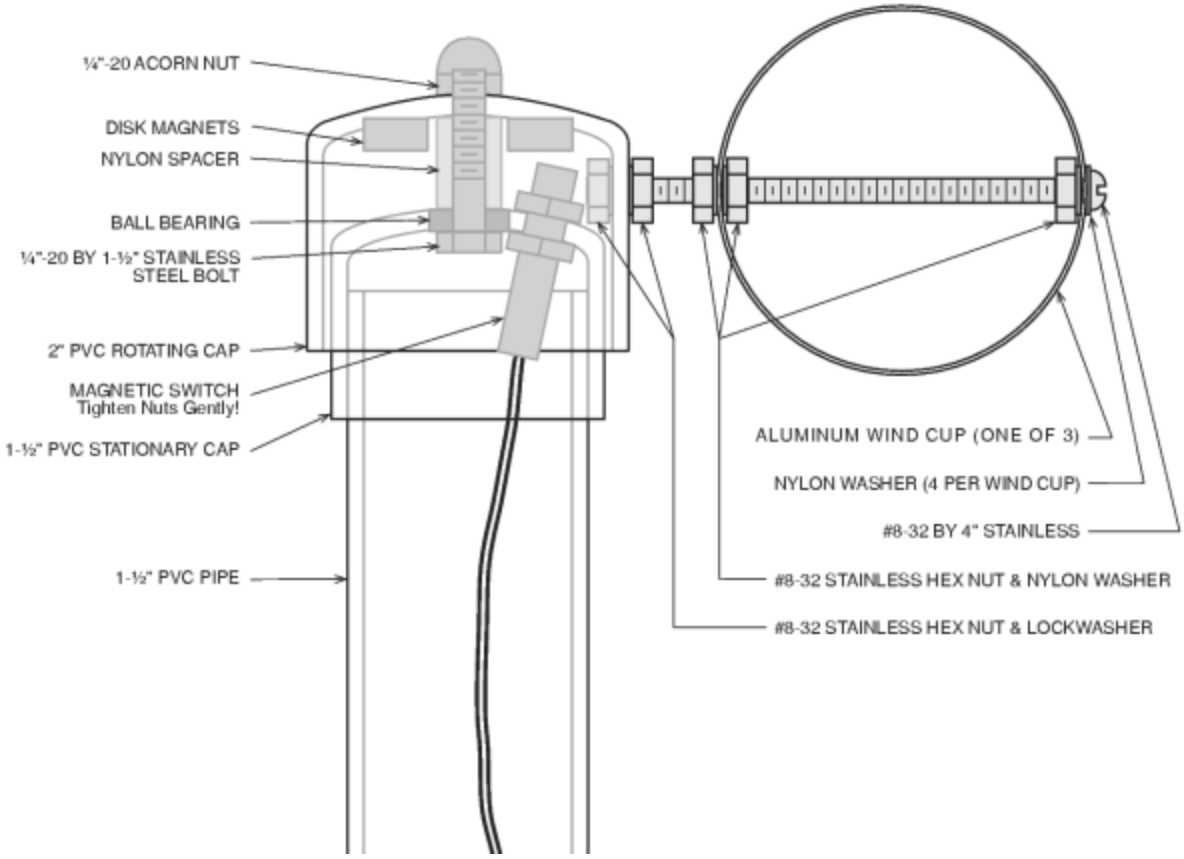
  Caution: tightening with too much force bends the plastic switch case and may crack the glass ampule enclosing the magnetic switch contacts.

- Place one of the custom stainless washers onto the 1.5" (38mm) long bolt. Slide the bolt through the ball bearing so that the head is inside the 1.5" cap. Place another custom stainless washer onto the bolt (on the top side of the bearing). Slide the 1" nylon spacer onto the bolt. Thread the bolt into the rotating cap. Using your nut driver, tighten the bolt. Be careful not to over tighten and strip the threads in the cap. After tightening the bolt head, put Loctite on the exposed threads and firmly fasten the acorn nut.
- Verify that the 2" cap turns freely, without rubbing the inside cap. Also verify that the magnetic switch does not rub against the magnets or hit the 4" screw or nuts. It should rotate freely with very little noise.

Install the connector:

- The connector assembly consists of the circuit board and RJ-45 connector soldered to the reed switch. There should be two hex spacers pre-pressed into the 1.5" (inner) PVC cap. Simply attach the circuit board to the hex spaces with the two #6-32x1/4" machine screws and a little Loctite.

Sectional Drawing


¼"-20 ACORN NUT
DISK MAGNETS
NYLON SPACER
BALL BEARING
¼"-20 BY 1-½" STAINLESS STEEL BOLT
2" PVC ROTATING CAP
MAGNETIC SWITCH Tighten Nuts Gently!
1-½" PVC STATIONARY CAP
1-½" PVC PIPE
ALUMINUM WIND CUP (ONE OF 3)
NYLON WASHER (4 PER WIND CUP)
#8-32 BY 4" STAINLESS
#8-32 STAINLESS HEX NUT & NYLON WASHER
#8-32 STAINLESS HEX NUT & LOCKWASHER