

## Important Notes

With a little care, the AquaCalc Pygmy Digital Magnetic Head will provide many years of service.

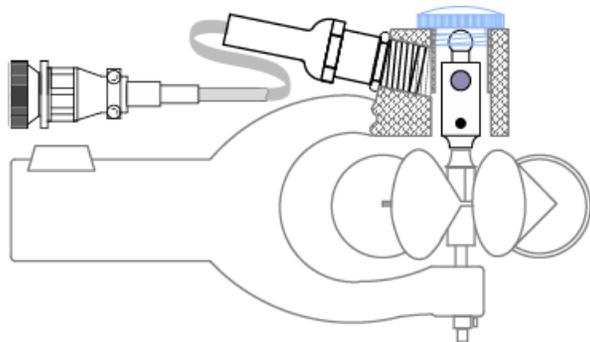
### Caution – Use Care When Transporting

**Excessive force can pull the wire from the Sensor Head.** When transporting assembled sounding equipment, be careful not to snag the cable on brush or other objects.

- In the field, we recommend that you carry a spare pygmy meter or carry the parts needed to convert your meter back to the cat-whisker contact, just in case.
- This AquaCalc Pygmy Digital Magnetic Head is for use with all versions of the AquaCalc Pro Plus, AquaCalc Pro, and AquaCalc 5000 with serial numbers greater than 400 and pigtail number 87. Contact us for more information.

## Parts List

Please make sure that you have received all of the following parts in your order before assembling.



Part Number	Description	Quantity
PMH-CA	Sensor Head and Cable (with AMP connector)	1
PMH-MSM	Pygmy Mag Shaft Upper with Magnet	1
PMH-CS	Pygmy Cap with Socket	1
PMH-OR	O-ring – Butyl rubber - US 010 - 1/4" x 1/8"	2

**AquaCalc** LLC

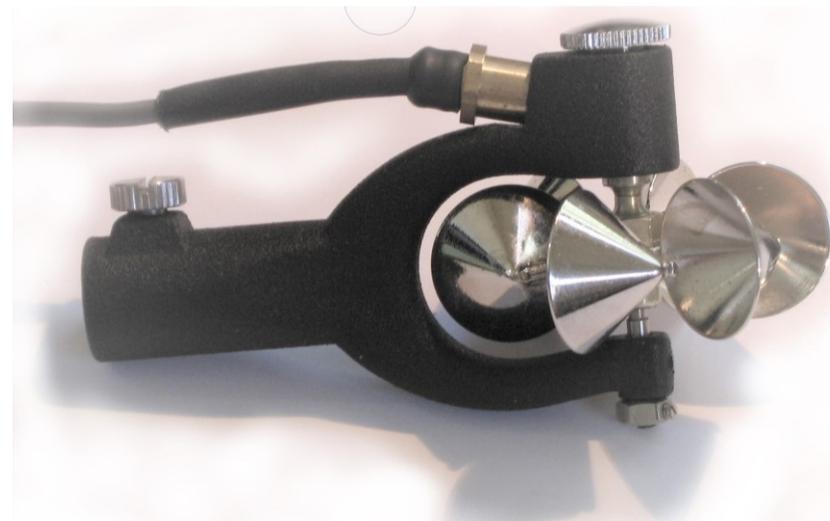
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## Installation Instructions for the Pygmy Digital Magnetic Head

**AquaCalc** LLC

*with USGS Style Upper Shaft and Magnet / Cap and Socket*  
**An Electronic Replacement for the Pygmy Current Meter's  
Cat-Whisker Contact**



AquaCalc LLC has developed a magnetic digital sensor for the Pygmy current meter that is designed to work with the AquaCalc line of stream flow computers. This retrofit has been designed to replace the “cat whiskers” that come standard on a Pygmy current meter. The cat whiskers are difficult to adjust precisely, must constantly be maintained, and can cause counting problems with electronic measuring devices.

Because of these problems, AquaCalc developed the Pygmy Digital Magnetic Head. The sensing components of the Pygmy Digital Magnetic Head are made with solid-state technology, with no mechanical parts or reed switches to maintain, wear out, or break.

Once installed in your current meter, the Pygmy Digital Magnetic Head is ready to plug into and gets power from, your AquaCalc.

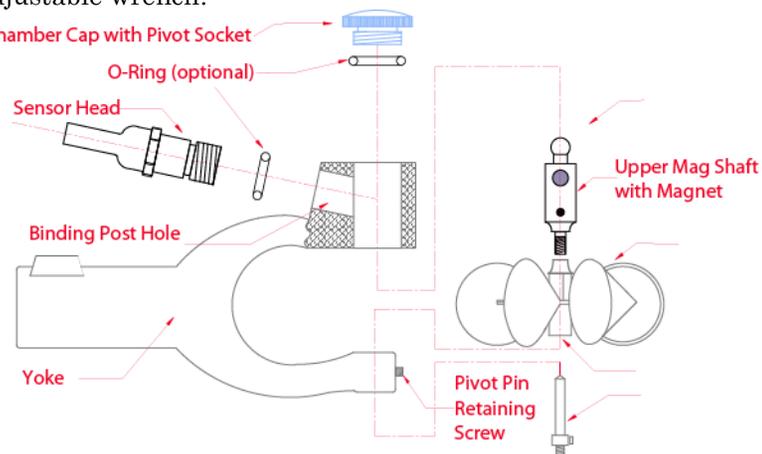
The Pygmy Digital Magnetic Head Retrofit Kit comes complete with all of the necessary hardware to retrofit your Pygmy current meter. In less than the time it takes to tear down a meter for cleaning, you can have the Pygmy Digital Magnetic Head installed.

## Installing the Pygmy Digital Magnetic Head

The AquaCalc Pygmy Digital Magnetic Head is designed so that it can be installed by the user, or can be installed by our Customer Service.

To install the Pygmy Digital Magnetic Head for the first time, you must disassemble the current meter, remove the cat whisker parts, and then install and adjust the Pygmy Digital Magnetic Head assembly. While following the detailed instructions, please refer to the diagrams here and the Parts List on the back page. Items listed in **Bold** are parts that came in the kit.

Tools needed: small pliers, small screwdriver, large paper clip and a small adjustable wrench.



**Warning - Do Not Force Parts! You may damage your Pygmy meter.**

## Disassembly of Your Existing Pygmy Current Meter

- 1) Unscrew and remove the existing Contact Chamber Cap.
- 2) Remove the Shipping Pin or Pivot Pin, whichever is currently installed, by first unscrewing the Pivot Pin Retaining Screw. (Please inspect the pivot pin for wear or damage and replace if necessary).
- 3) Unscrew and remove the existing Upper Shaft from the bucket wheel.
- 4) Remove the bucket wheel.
- 5) Unscrew and Remove the existing Binding Post Assembly.
- 6) Unscrew and remove the existing brass Upper Yoke Bushing if it is installed. This bushing will no longer be needed with the new Shaft.

## Installing Pygmy Digital Magnetic Head Components

- 7) Clean the yoke. Inspect the binding post hole for bad threads.
- 8) Install the bucket wheel into the yoke.
- 9) Screw the replacement **Upper Mag Shaft with Magnet** into bucket wheel. Tighten using a paper clip through hole in the shaft.
- 10) Apply one drop of oil into Contact Chamber Cap with Pivot Socket.

- 11) Install the Contact Chamber Cap with Pivot Socket. If the cap contacts the Sensor or does not screw all of the way down, place an optional O-Ring at the base of the threads on the Contact Chamber Cap
- 12) Insert the shipping pin into the yoke, secure the bucket wheel and tighten the retaining screw.
- 13) Grasp the hexagonal base of the **Sensor Head**, and screw it into the binding post hole, to the point where it begins to protrude into chamber. If the **Sensor Assembly** protrudes too far into the Chamber, use one of the optional O-rings at the base of the threads on the **Sensor Assembly**. (See photo above and step 21)



**Optional O-Rings in place.**

- a) *Do not grasp or twist the cable when screwing in the Sensor Head as this may damage the cable. Avoid damaging the threads.*
- 14) Rotate the bucket wheel to insure freedom of movement.
  - 15) Remove the shipping pin and install the pivot pin.
  - 16) **Adjust the Pivot Pin using the Pivot Nut:**
    - a) Loosen the Pivot Nut set screw and turn the adjusting nut at least 2 turns counter clockwise (as viewed from below).
    - b) Insert the Pivot Pin into the frame making sure that the flat spot is facing the Pivot Pin Retaining Screw.
    - c) Push the Pivot Pin upward until all vertical play is removed from the bucket wheel, and snug the Pivot Pin Retaining Screw.
    - d) Turn the Pivot Nut clockwise until it touches the frame.
    - e) Loosen the Pivot Pin Retaining Screw and turn the Pivot Nut 1/8 turn clockwise. This correctly positions the Pivot in relation to the bearing. Tighten the Pivot Pin Retaining Screw and Pivot Nut set screw. There will be a small amount of lateral play in the bucket wheel. This is normal and assures that the bearing and pivot are not overly tight.
  - 17) **Spin test the current meter.** The spin test should last from 45 seconds to 1.5 minutes. If it is less than 45 seconds, clean, lubricate and re-adjust the current meter. Allowing the meter to spin continuously for a short while may improve spin times. If the meter is properly adjusted, the cups should stop rotating smoothly, and may spin backwards slightly. Check the current meter cups for any wobble, the lower hub bearing for wear and "chatter", the pivot pin for wear, and the yoke for alignment, and replace each as needed.
  - 18) Connect the assembled current meter with the AquaCalc Pygmy Digital Magnetic Head to your AquaCalc, start a measurement on the AquaCalc, and then spin the bucket wheel to assure that the AquaCalc will count properly. If the AquaCalc does not count correctly, adjust the **Sensor Head** 1/8<sup>th</sup> turn in or out as needed and retest.
  - 19) Replace pivot pin with shipping pin, to store the current meter.

**Congratulations!** The retrofit is now complete and your AquaCalc Pygmy Digital Magnetic Head is ready for field use.