

Attachment 1a.--Detailed instructions for maintenance of Price type AA current meters

These instructions are intended to supplement those appearing in TRWI, Book 8, Chapter 2, Calibration and maintenance of vertical-axis type current meters.

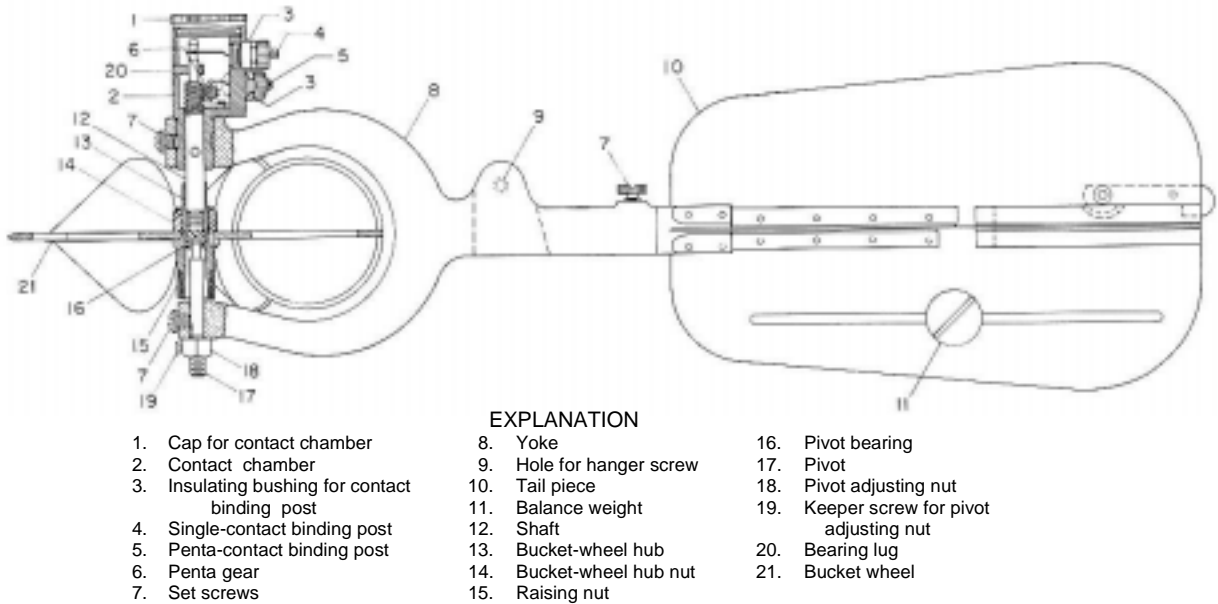


Figure 1.--Assembly drawing of Price AA current meter.

- Release raising nut (15) by unscrewing nut. NEVER unscrew lifting nut by holding nut and spinning bucket wheel (21). This prohibited procedure will bend the meter's shaft (12).
- Spin the meter's bucket wheel (21) to determine if the bucket-wheel frame is bent. If the bucket-wheel frame wobbles, determine if the bucket-wheel hub (13) is also wobbling. If the upper portion of the bucket-wheel hub wobbles more than the lower portion, the shaft is bent. If the shaft is bent, replace it in a subsequent step described later in these instructions. If the lower section of the bucket-wheel hub wobbles, this is a sign that the pivot bearing (16) is worn. The bucket-wheel hub should be replaced, if the pivot bearing is worn. If the bucket-wheel hub is not wobbling and the bucket wheel is, the frame is bent. If the frame is bent, replace the bucket wheel before putting back into service.
- Remove contact-chamber cap (1). NEVER remove the contact-chamber cap with the raising nut engaged. This will bend the shaft (12). Looking down into the contact chamber, spin the meter to ensure there is not a wobble in the upper shaft. A wobble of the upper shaft is an indication of a bent shaft that should be replaced.
- Remove contact chamber (2). Take care when lifting the contact chamber off the yoke (8) and shaft that the penta-gear assembly (6) does not bind.
- Remove pivot (17). Remove shaft. Remove the shaft by inserting a small Allen wrench into the hole in the shaft and unscrewing. Clean the shaft and acme threads (threads that penta-gear engage into). Replace shaft if the contact edge shows signs of nicking. Replace shaft if any portion of the shaft is bent. Rolling the shaft on a flat surface will reveal signs of the shaft being bent. (The vast majority of bends have been found in the reduced diameter section, bearing and contact area.) Replace shaft if there are burrs in the acme threads.
- Clean pivot and check for burrs on the point of the pivot. (A burr, which is a deformation of the pivot point, can be seen with a magnifying glass or felt against sensitive skin or with a fingernail.) The majority of AA meters found with burrs on the pivot will not fit within the allowable limits of the standard rating equation. Pivots with rounded points should be replaced. Also check to see if the pivot is magnetized. To do this, touch the pivot on a paper clip. If the pivot lifts the paperclip, the pivot is magnetized; demagnetize using a bulk magnetic tape eraser or a tape player head demagnetizer, or replace the pivot.

- Clean pivot bearing (16). The end of a cotton swab is usually too large to fit all the way down into the pivot bearing. Removing some of the cotton on the sides of the swab and making a point of the cotton on the end will usually get into the bottom of the pivot bearing. A clean pivot bearing will usually shine when clean. If there is hardened material in the pivot bearing, a drop or two of meter oil left sitting for a couple minutes will help in the cleaning. (One can use a small piece of lint-free paper towel (industrial wipes) wrapped around the end of a small Allen wrench. If this arrangement is used, take extreme care that the paper towel fully covers the end of the wrench so it will not scratch the pivot bearing or its carrier.)
- Clean contact chamber. If the contact chamber does not have sediment in it and there is not a great deal of old oil in the chamber, the chamber can be cleaned by using a lint free swab or paper-towel covered rod. Pay particular attention to cleaning the bearing surface of the bearing lug (20) and the edges of the penta gear. If there is sediment or excessive oil in the contact chamber, the penta gear may have to be removed and the chamber and penta gear cleaned with a cleaning fluid. (Removal of the penta gear should be avoided if at all possible. If the penta gear is removed, the cat whiskers (4 and 5) should be removed and the position of the penta gear noted. The reinstallation of the penta gear will require some trial and error adjustment to insure that the penta gear and the shaft does not bind.) A spray cleaning fluid like WD40 can be used with moderate success. All parts should be allowed to fully dry before reassembly.
- Check yoke with yoke-alignment tool (HIF stock number 1101058). The tool should slide easily in to the yoke, all the way down. DO NOT force the alignment tool into the yoke. DO NOT use the alignment tool to straighten the yoke. To straighten the yoke, use a rubber hammer to gently move the yoke arms back into alignment. Forcing the yoke to move too far will weaken the yoke and may crack it.
- If it was determined that the pivot bearing should be replaced, replace bucket-wheel hub, which contains the bearing. Unscrew the bucket-wheel hub nut (14) to remove the bucket wheel.
- To replace bucket wheel, remove the bucket-wheel hub nut (14) and change the bucket wheel. The letter and number on the bucket-wheel frame (such as S90) should face up. The alignment pin on the hub should be inserted into the key slot of the bucket wheel frame. This will ensure that the bucket wheel will not slip on the hub during use. If the alignment pin is missing or damaged, replace the bucket wheel hub.
- Individual cups of the bucket wheel can be repaired if they are not too badly bent. A device with a hard curved edge will work okay for this procedure. (A handle of a pair of pliers wrapped in a soft rag is sometimes used if the proper tools are not available.) If the cup cannot be brought back to its original shape, or if the plating is popped off of the base metal, the bucket wheel should be replaced. If the bucket-wheel frame is bent, the bucket wheel should be replaced.
- Oil pivot bearing. One drop of meter oil is all that it takes. Too much oil will attract sediment. (One can dip the end of a straightened paper clip into the meter oil and transfer the drop that accumulates to the pivot bearing.) Vegetable-based oils, like 3-in-1 oil, and silicon based oils should not be used. Vegetable-based oils emulsify too easily, and silicon-based oils hold sediment and are difficult to clean off.
- Align bucket-wheel assembly in the yoke and install shaft by screwing the shaft back into the top of the bucket-wheel hub using a small Allen wrench or rod. The shaft should be snug but not so tight that to remove it will bend the wrench or rod being used.
- Insert pivot through the bottom hole in the yoke. Using the pivot set screw (7), not adjusting nut (18), set the pivot so that the bucket-wheel hub is just touching the lower yoke arm (this is to ensure that when installing the contact-chamber cap that the shaft is not too high). The pivot will be adjusted as needed later.
- Install contact chamber. Insert contact chamber over shaft. Take care not to force chamber onto the shaft and yoke. Twisting back and forth is sometimes needed to get the chamber to fit into place. Align marks on the front of the contact chamber and yoke or binding posts with the back of the yoke and tighten set screw.
- Install contact-chamber cap. While slowly spinning the bucket wheel, screw on the contact chamber cap slowly making sure that the shaft does not bind on the cap. The bucket wheel will stop spinning abruptly if the shaft hits the cap.
- Set the pivot, if needed. Follow the directions in table 1 (below) for setting the pivot.
- Set cat whiskers. After the pivot has been set, remove the contact-chamber cap and set the cat whiskers; both penta and single count. Set both to get a strong, even click (scratch). Oil on a cat whisker wire, or an old worn wire will

not give a clean enough contact for electronic counters. For electronic counters, the OSW Hydraulics Laboratory personnel have found that setting the single count cat whisker to make contact for about the rotational distance of 1/2 of one bucket (approximate dwell angle of 30 degrees) and the penta-count cat whisker to make contact for approximately 1/2 to 3/4 wheel revolutions (180- to 270-degree dwell angle) results in good, clean signals.

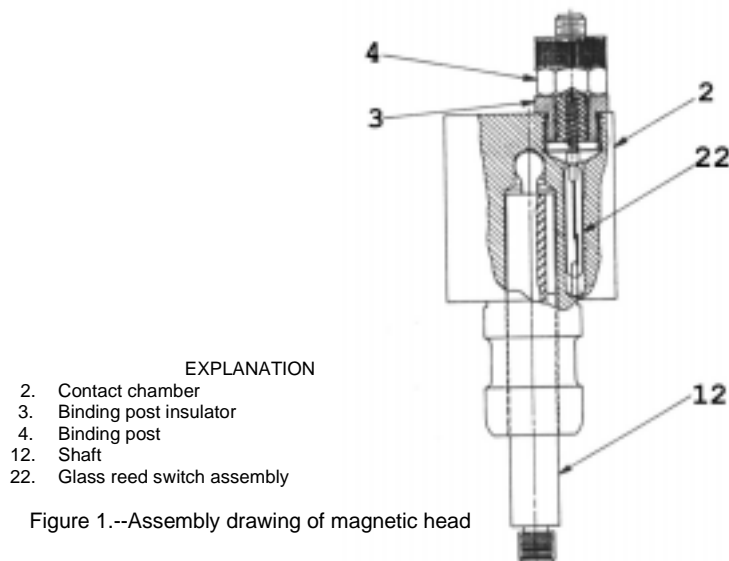
- Oil shaft and penta gears. Oil lug bearing with one drop of oil. Place one drop of oil on the top of the shaft. Place one drop of oil on each side of the penta gear. Place one to two drops of oil on the acme threads on the shaft. Be warned that applying too much oil in the contact chamber could possibly contaminate the cat-whisker contact wires making the meter unusable with electronic counters. Replace contact-chamber cap.
- Spin test the meter. Spin limits are given in OSW Technical Memorandum No.89.07. All timed spin tests should be conducted with the meter level and the shaft vertical and in a location with NO air currents. (Setting the meter on its tail fins will NOT level the meter.) Minimum spin time is 2:00 minutes; optimum spin time is more than 4:00 minutes.
- Lift the bucket-wheel assembly off the pivot using the raising nut to complete the task. DO NOT spin the bucket wheel to engage the raising nut.

Table 1. Adjustment of the pivot

<u>Sequence</u>	<u>Operation</u>
1.	Make sure the meter has been properly oiled; then, hold meter in inverted position with pivot up.
2.	Release the keeper screw (19) for pivot-adjusting nut (18) and unscrew the nut a few turns.
3.	Release set screw (7) and push the pivot inward until all vertical play of the hub assembly is eliminated.
4.	Tighten set screw (7) temporarily and advance pivot adjusting nut (18) until it touches the yoke.
5.	Release set screw (7) (not too far because the pivot should not revolve) and advance the pivot-adjusting nut one-fourth turn. Then, tighten the keeper screw (19).
6.	Push the pivot inward as far as it will go and tighten set screw (7).

Attachment 1b.--Detailed instructions for maintenance of Price type AA current meters with magnetic contact chamber

These instructions are intended to supplement those appearing in TRWI, Book 8, Chapter 2, Calibration and maintenance of vertical-axis type current meters.



The part numbers for all parts other than the magnetic contact chamber are referenced to the figure in attachment 1a of the standard Price type AA current meter.

- Release raising nut (15) by unscrewing nut. NEVER unscrew lifting nut by holding nut and spinning bucket wheel (21). This prohibited procedure will bend the meter's shaft (12).
- Spin the meter's bucket wheel (21) to determine if the bucket-wheel frame is bent. If the bucket-wheel frame wobbles, determine if the bucket-wheel hub (13) is also wobbling. If the upper portion of the bucket-wheel hub wobbles more than the lower portion, the shaft is bent. If the shaft is bent, replace it in a subsequent step described later in these instructions. If the lower section of the bucket-wheel hub wobbles, this is a sign that the pivot bearing (16) is worn. The bucket-wheel hub should be replaced, if the pivot bearing is worn. If the bucket-wheel hub is not wobbling and the bucket wheel is, the frame is bent. If the frame is bent, replace the bucket wheel before putting back into service.
- Remove contact chamber by loosening the set screw (7).
- Remove pivot (17). Remove shaft. Remove the shaft by inserting a small Allen wrench into the hole in the shaft and unscrewing. Clean the shaft. Replace shaft if any portion of the shaft is bent. Rolling the shaft on a flat surface will reveal signs of the shaft being bent. (The magnet may protrude beyond the side of the shaft preventing its full rotation.) If the magnet protrudes beyond the side of the shaft, look for signs of rubbing of the magnet on the inner wall of the contact chamber. Bright sections on the magnet are signs that it is rubbing. Replace the shaft if there is rubbing. Replace the shaft if signs of scarring or burrs are found. NOTE: If scarring is found on the rounded section of the shaft, this is an indication that sediment has found its way into the bearing surfaces. The contact chamber will also have been scarred and should be replaced if sediment has scarred the shaft.
- Clean pivot and check for burrs on the point of the pivot. (A burr, which is a deformation of the pivot point, can be seen with a magnifying glass or felt against sensitive skin or with a finger nail.) The majority of AA meters found with burrs on the pivot will not fit within the allowable limits of the standard rating equation. Pivots with rounded points should be replaced. Also check to see if the pivot is magnetized. To do this, touch the pivot on a paper clip. If the pivot lifts the paper clip, the pivot is magnetized; demagnetize using a bulk magnetic tape eraser or a tape player head demagnetizer, or replace the pivot.
- Clean pivot bearing (16). The end of a cotton swab is usually too large to fit all the way down into the pivot bearing. Removing some of the cotton on the sides of the swab and making a point of the cotton on the end will usually get into the bottom of the pivot bearing. A clean pivot bearing will usually shine when clean. If there is

hardened material in the pivot bearing, a drop or two of meter oil left sitting for a couple minutes will help in the cleaning. (One can use a small piece of lint-free paper towel (industrial wipes) wrapped around the end of a small Allen wrench. If this arrangement is used, take extreme care that the paper towel fully covers the end of the wrench so it will not scratch the pivot bearing or its carrier.)

- Clean contact chamber. The end of a cotton swab is usually too large to fit all the way down into the bearing surface. Removing some of the cotton on the sides of the swab and making a point of the cotton on the end will usually get all the way into the bearing surfaces. A clean bearing surface will usually shine when clean. If there is hardened material in the bearing surfaces, several drops meter oil left sitting for a couple minutes will help in the cleaning. (One can use a small piece of lint-free paper towel (industrial wipes) wrapped around the end of a small Allen wrench. If this arrangement is used, take extreme care that the paper towel fully covers the end of the wrench so it will not scratch the bearing surfaces.)
- Check yoke with yoke-alignment tool (HIF stock number 1101058). The tool should slide easily in to the yoke, all the way down. DO NOT force the alignment tool into the yoke. DO NOT use the alignment tool to straighten the yoke. To straighten the yoke, use a rubber hammer to gently move the yoke arms back into alignment. Forcing the yoke to move too far will weaken the yoke and may crack it.
- If it was determined that the pivot bearing should be replaced, replace bucket-wheel hub, which contains the bearing. Unscrew the bucket-wheel hub nut (14) to remove the bucket wheel.
- To replace bucket wheel, remove the bucket-wheel hub nut (14) and change the bucket wheel. The letter and number on the bucket-wheel frame (such as S90) should face up. The alignment pin on the hub should be inserted into the key slot of the bucket wheel frame. This will ensure that the bucket wheel will not slip on the hub during use. If the alignment pin is missing or damaged, replace the bucket wheel hub.
- Individual cups of the bucket wheel can be repaired if they are not too badly bent. A device with a hard curved edge will work okay for this procedure. (A handle of a pair of pliers wrapped in a soft rag is sometimes used if the proper tools are not available.) If the cup cannot be brought back to its original shape, or if the plating is popped off of the base metal, the bucket wheel should be replaced. If the bucket-wheel frame is bent, the bucket wheel should be replaced.
- Oil pivot bearing. One drop of meter oil is all that it takes. Too much oil will attract sediment. (One can dip the end of a straightened paper clip into the meter oil and transfer the drop that accumulates to the pivot bearing.) Vegetable-based oils, like 3-in-1 oil, and silicon based oils should not be used. Vegetable-based oils emulsify too easily, and silicon-based oils hold sediment and are difficult to clean off.
- Oil the contact chamber with one or two drops of meter oil. Too much oil will attract sediment. (One can dip the end of a straightened paper clip into the meter oil and transfer the drop that accumulates to the pivot bearing.) Vegetable-based oils, like 3-in-1 oil, and silicon based oils should not be used. Vegetable-based oils emulsify too easily and the silicon based oils hold sediment and are difficult to clean off.
- Align bucket-wheel assembly in the yoke and install the shaft by screwing the shaft back into the top of the bucket-wheel hub using a small Allen wrench or rod. The shaft should be snug but not so tight that to remove it will bend the wrench or rod being used.
- Insert pivot through the bottom hole in the yoke. Using the pivot set screw (7), not adjusting nut (18), set the pivot so that the bucket-wheel hub is just touching the lower yoke arm (this is to ensure that when installing the contact chamber that the shaft is not too high). The pivot will be adjusted as needed later.
- Install contact chamber. Insert contact chamber over shaft. Take care not to force chamber onto the shaft and yoke. Twisting back and forth is sometimes needed to get the chamber to fit into place. Align the binding post with the yoke arm with the binding post towards the back of the meter.
- Set the pivot, if needed. Follow the directions in table 1 (below) for setting the pivot.
- A poor signal, or no signal, received from the meter can be because of one or more of several items. 1) Check the strength of the magnet on the shaft. When trying to pick up a paper clip, a good magnet will hold the paper clip firmly to the magnet. Replace the shaft if the paper clip is held weakly, or not at all. 2) Check the reed switch, located under the binding post, for signs of burn marks on the flat plates in the reed switch. Replace the reed switch if burn marks are observed. (Too much electrical current passing through the switch causes burning.) 3) Look for corrosion on the wire ends of the reed switch and in its hole in the contact chamber. If corrosion is

found, clean the corrosion off the reed switch wire ends and from its hole. (The end of a paper clip has been used to clean corrosion from the reed switch hole.)

- To replacing the reed switch, remove the binding post from the top of the contact chamber. Remove the reed-switch keeper spring and the reed switch. When inserting the reed switch, the end of the switch with the solder ball (sometimes a small disk) should face the binding post (up). Best signals are obtained when the reed switch is orientated such that the flat portions of the reed switch face the meter's shaft with the longer arm farthest from the shaft (facing out). Insert the reed-switch keeper spring over the reed switch. Replace the binding post making sure the keeper spring is inserted into the hold in the bottom of the binding post. Tighten the binding post until snug.
- Spin test the meter. Spin limits are given in OSW Technical Memorandum No.89.07. (Spin times for an AA meter with a magnetic contact chamber will be the same as for a standard AA with a cat-whisker contact chamber.) All timed spin tests should be conducted with the meter level and the shaft vertical and in a location with NO air currents. (Setting the meter on its tail fins will NOT level the meter.) Minimum spin time is 2:00 minutes; optimum spin time is more than 4:00 minutes.
- Lift the bucket-wheel assembly off the pivot using the raising nut to complete the task. DO NOT spin the bucket wheel to engage the raising nut.

Table 1. Adjustment of the pivot

<u>Sequence</u>	<u>Operation</u>
1.	Make sure the meter has been properly oiled; then, hold meter in inverted position with pivot up.
2.	Release the keeper screw (19) for pivot-adjusting nut (18) and unscrew the nut a few turns.
3.	Release set screw (7) and push the pivot inward until all vertical play of the hub assembly is eliminated.
4.	Tighten set screw (7) temporarily and advance pivot adjusting nut (18) until it touches the yoke.
5.	Release set screw (7) (not too far because the pivot should not revolve) and advance the pivot-adjusting nut one-fourth turn. Then, tighten the keeper screw (19).
6.	Push the pivot inward as far as it will go and tighten set screw (7).

Attachment 2.—Detailed instructions for maintenance of Price pygmy current meters

These instructions are intended to supplement those appearing in Book 8, Chapter 2, Calibration and maintenance of vertical-axis type current meters.

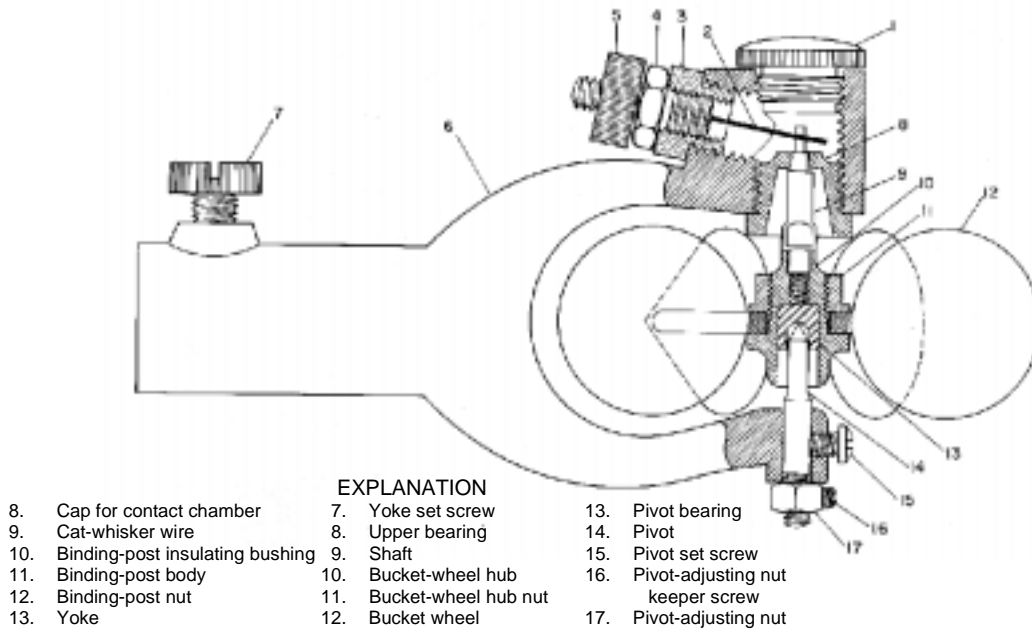


Figure 1.--Assembly drawing of pygmy current meter.

- Remove the shipping plug and insert the pivot (14). NOTE: If the working pivot has a burr, use a new pivot in its place for the meter checkup.
- Visually inspect the meter for pivot alignment problems. The pivot should line up with the shaft (9) of the meter. If they do not line up, this is an indication of the yoke (6) being out of alignment. (See yoke alignment procedure below.)
- Rotate the bucket wheel (12) and check for wobble. If wobbling is found, either the bucket-wheel frame is bent, one of the buckets is bent, or the pivot bearing (13) is worn. Replace the bucket wheel if the frame or one of the buckets is bent. To determine if the pivot bearing is worn, look to see if the lower section of the bucket-wheel hub (10) wobbles when the bucket wheel is slowly rotated. If the hub wobbles, replace the hub.
- Check the upper bearing (8) and shaft (9) for excessive wear. This is accomplished by taking the contact-chamber cap (1) off and observing the shaft as the bucket wheel is rotated slowly. As the cat-whisker wire (2) slides over the contact lobe of the shaft, there should be no discernible movement of the shaft away from the cat whisker. If movement is observed, replace the upper bearing. (See the upper bearing removal/installation section below.)
- Visually check the shaft (9) to see if it is bent. Rotate the bucket wheel slowly to see if the upper section of the shaft in the contact chamber wobbles (not associated with a worn upper bearing). If the upper section of the shaft wobbles, replace it.
- Visually inspect the cat-whisker wire. Replace the cat whisker if it is kinked, twisted, or coated with an oil film. (It has been found that when using electronic counters, a film of oil on the cat-whisker wire will interfere with the signal.)
- To remove/replace the cat whisker, use a thin wrench to unscrew the cat-whisker wire and binding post (4). Use a pair of pliers to remove the binding-post insulator (3) if it does not come off with the binding post by hand. Install the new cat whisker, binding post and insulator by tightening until snug.
- Remove the bucket-wheel assembly (bucket wheel (12), hub (10), and shaft (9)) by loosening the pivot set screw (15) and removing the pivot and then bucket-wheel assembly. NOTE: Do not force the assembly. Some of the older

pygmy meter yokes have limited clearance between the yoke arms. Subsequently, the bucket-wheel assembly will come out in only one position. Rotate the assembly until finding the one position that will allow its removal.

- To remove the bucket wheel from the hub, either use a deep 5/16" socket to slip over the shaft and loosen the bucket-wheel hub nut (11), or remove the shaft by unscrewing with a pair of pliers or a small adjustable wrench (preferred method) and using a standard 5/16" socket to loosen the bucket-wheel hub nut. The bucket wheel should slide off of the hub. Hint: If the bucket wheel will not easily slide off of the hub, replace the hub nut a couple threads (make sure there is a gap between the bottom of the nut and the top of the bucket wheel), place the socket on the nut, flip upside down and gently hit the back of the socket on a hard surface while cradling the bucket wheel in your hand.
- Install a new bucket wheel by inserting the hub assembly into the bottom of the bucket wheel center hole. (The top of the bucket wheel is marked with an "Sxx", where the xx is the year it was manufactured, on the top of the bucket-wheel frame. If there are no markings, the bucket wheel must be installed such that the bucket wheel will rotate in the counterclockwise direction when looking down on it.) (A bucket wheel, when without an "Sxx", MUST have an individual rating; the standard rating DOES NOT apply.) Tighten the bucket-wheel retaining nut snugly. DO NOT over tighten.
- Clean pivot bearing (13). The end of a cotton swab is too large to fit down into the pivot bearing. Remove some of the cotton on the sides of the swab making a point of the cotton on the end will usually get into the bottom of the pivot bearing. A clean pivot bearing will usually shine when clean. If there is hardened material in the pivot bearing, a drop or two of meter oil left sitting for a couple minutes will help in the cleaning. (One can use a small piece of lint-free paper towel (industrial wipes) wrapped around the end of a small Allen wrench. If this arrangement is used, take extreme care that the paper towel fully covers the end of the wrench so it will not scratch the pivot bearing or its carrier.)
- Oil the pivot bearing. One drop of meter oil is all that it takes. Too much oil will attract sediment. (One can dip the end of a straightened paper clip into the meter oil and transfer the drop that accumulates to the pivot bearing.) Vegetable-based oils, like 3-in-1 oil, and silicon based oils should not be used. Vegetable-based oils emulsify too easily, and silicon based oils hold sediment and are difficult to clean off.
- Clean the shaft and upper bearing.
- Clean the pivot (14) and check for burrs on the point of the pivot. Replace the pivot if a burr is found or if the pivot point is rounded. Also check to see if the pivot is magnetized. To do this, touch the pivot on a paper clip. If the pivot lifts the paper clip, the pivot is magnetized; demagnetize using a bulk magnetic tape eraser or a tape player head demagnetizer, or replace the pivot.
- Screw the shaft into the top of the hub assembly using a pair of pliers or a small adjustable wrench (preferred method).
- To remove the upper bearing, use a set of small pliers. WARNING: DO NOT crush the upper bearing when attempting to remove!!
- To install an upper bearing, gently screw a new bearing into the underside of the upper yoke arm using a small pair of pliers. WARNING: DO NOT crush the bearing by using excessive squeezing force with the pliers. It is better to have the pliers slip than to crush or deform the upper bearing. The bearing is fully inserted when the lower lip of the bearing makes contact with the lower surface of the upper yoke arm.
- Yoke alignment check. NOTE: To insert the pygmy yoke alignment tool (HIF stock number 1103028) the upper bearing (8) and the cat-whisker wire (2) must be removed. Screw the alignment tool into the top of the yoke until the lower pin is about to enter the pivot hole in the lower yoke arm. Visually check to see if the lower pin will slide into the pivot hole. (DO NOT force the lower pin into the pivot hole by screwing the alignment tool all the way down without visually checking the alignment first. If the lower arm of the yoke is moderately to grossly out of alignment, forcing the alignment tool into the pivot hole will either bent the alignment tool or deform the pivot hole, making the yoke unusable.) Align the yoke as needed using a rubber hammer. Once you are satisfied that the alignment is okay, or only slightly out of alignment, then gently screw the alignment tool down until the lower pin completely inserted into the pivot hole. WARNING: There is no machined stop on the pygmy alignment tool similar to the AA alignment tool. You must stop screwing the alignment tool whenever the lower pin is fully inserted into the pivot hole. Forcing the alignment tool beyond this point or forcibly screwing the alignment tool into the lower yoke arm will damage the yoke beyond repair.

- Insert the bucket-wheel assembly into the yoke by inserting the shaft into the upper bearing hole and wiggling until the assembly slides into place. NOTE: Do not force the assembly. Some of the older pygmy meter yokes have limited clearance between the yoke arms. Subsequently, the bucket-wheel assembly will insert in only one position. Rotate the assembly until finding the one position that will allow its insertion.
- Insert the pivot and adjust as needed. To adjust the pivot correctly, follow the instructions in the following table.

Table 1. Adjustment of the pivot

<u>Sequence</u>	<u>Operation</u>
1.	Make sure the meter has been properly oiled; then, hold meter in inverted position with pivot up.
2.	Release the keeper screw (16) for pivot-adjusting nut (17) and unscrew the nut a few turns.
3.	Release set screw (15) and advance pivot until all vertical play of the hub assembly is eliminated.
4.	Tighten set screw (15) temporarily and advance pivot-adjusting nut (17) until it touches the yoke.
5.	Release set screw (15) (not too far because the pivot should not revolve) and advance the pivot-adjusting nut one-fourth turn. Then, tighten the keeper screw (16).
6.	Push the pivot inward as far as it will go and tighten set screw (15).

- Adjust the cat whisker as needed to obtain a strong click (scratch). For electronic counters, the OSW Hydraulics Laboratory personnel have found that setting the contact wire to make contact for about the rotational distance of one bucket (approximate dwell angle of 60 degrees) results in a good clean signal.
- Oil the upper bearing and shaft contact point with one drop of oil only.
- Replace the contact-chamber cap.
- Spin test the meter. Spin limits are given in OSW Technical Memorandum No. 89.07. All timed spin tests should be conducted with the meter level and the shaft vertical and in a location with NO air currents. Minimum spin time is 45 seconds; optimum spin time is more than 1:30 minutes. NOTE: If the bucket wheel "chatters" when spun hard, this is a sign that the pivot bearing is worn. Replace the hub (10) if chattering occurs during spin testing.
- Replace the pivot with the shipping plug to make the meter ready for storage or transport.

Attachment No. 3.—Suggested format for current-meter logs

CURRENT-METER LOG				
Meter Type: AA Pygmy Other _____ Circle type			Meter No. _____	Bucket-Wheel No. _____
Date	Meter user	Entry made by	Spin time	Description of repairs, notation of disassembly inspections, and remarks
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