



Operations Training Department

Technical Update – Spring Extra #2

SPOTTING AND CLOCKING AMERICAN METERS WITH THE NEWER STYLE INDEX

The procedural changes discussed in this Technical Update are related to the use of the “test hands” on the index of some American meters.

As you know, the test hands are primarily used when “spotting the meter” for possible leaks in the down stream piping of the fuel run system (test hand movement indicates consumption through the meter) and to measure the input of appliances. So, it is imperative that we are able to depend on the accuracy of the test hands.

Many of you have noticed that the movement of the test hands on some American meters, with or without AMR devices, is different and often times erratic, as the indexes seem to stick and then jump. The following information should help you to understand why the dials act this way and should also re-assure you that if you follow the procedures contained herein, the use of the test hands continues to be a reliable method for these checks.

For you to understand the solution, it is important that you understand the cause of the problem. About three years ago American Meter began to use a **new style of index**. The new index is made of all plastic gears and is designed to lessen the internal friction while continuing to measure the gas usage accurately. This reduced internal friction is meant to put less wear and tear on the meter itself but it is also what contributes to the erratic movement noted above. The decreased friction on the gears allows the gears to turn more freely but when the dials are spinning quickly the rapid movement causes the smallest test hand to appear like it is sticking and jumping. The fact is that this hand can jump ahead when it is on the “downhill swing” but what you need to be aware of is that the gears “catch up” to it on the “uphill swing”. A simple method to overcome this is first to remind you what you already know--when the test hand is moving on the up swing direction, its movement will be steady. That is why we’ve always had a procedure in place that calls for the test hand to be on the upswing when checking for leaks. This is also the same reason we’ve always advocated that when “clocking a meter” that the test begin and end on the upswing as well. However, with these newer style indexes you now need to go one step farther.

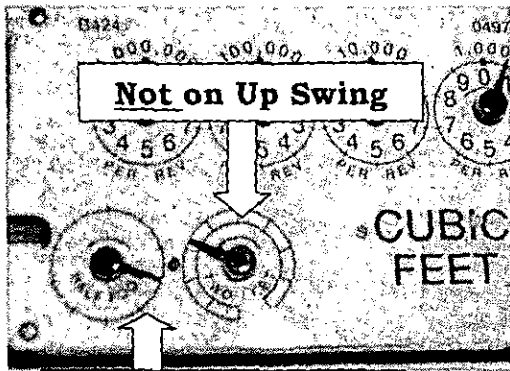
Remember - BOTH test hands must be on the up swing. When both test hands are on the up swing the reading will indicate a steady reading. The following pictures are of the New Style index and it shows that both hands rotate in the same direction.

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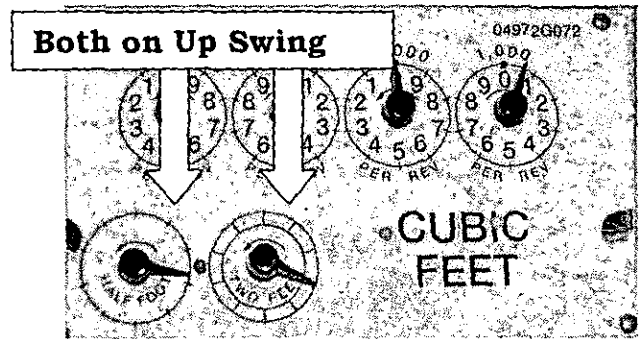
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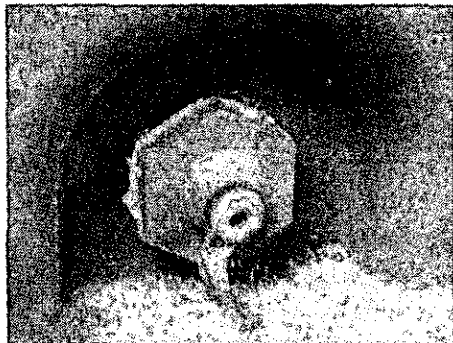
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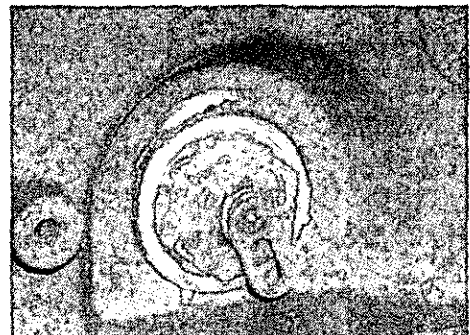
In The Up Swing



The drive "dog" arm from the meter body is directly connected to the larger test hand, "commonly referred to as the drive hand". This can be a One-Foot hand but is more commonly a Two-Foot hand on the index. On American meters with the old style index, the configuration is such that the checks can be made when only the smaller test hand is on the up swing because the friction on the drive hand will hold steady. Since the newer style index has much less internal friction, when the test hand is moving in a downward direction it can appear to speed up for a very short period of time. *But, it is very important that you understand that this is not in any way affecting the accuracy of the meter read.*

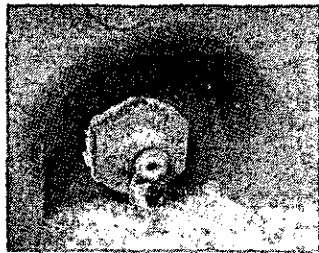


1/4 Foot / 1 Foot Style

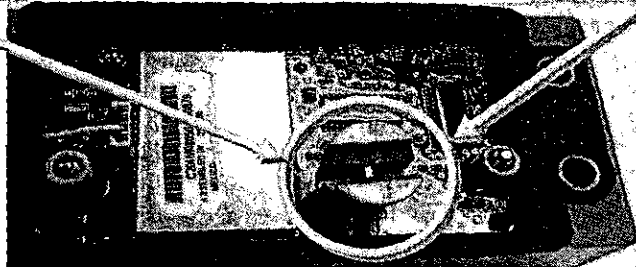


1/2 Foot / 2 Foot Style

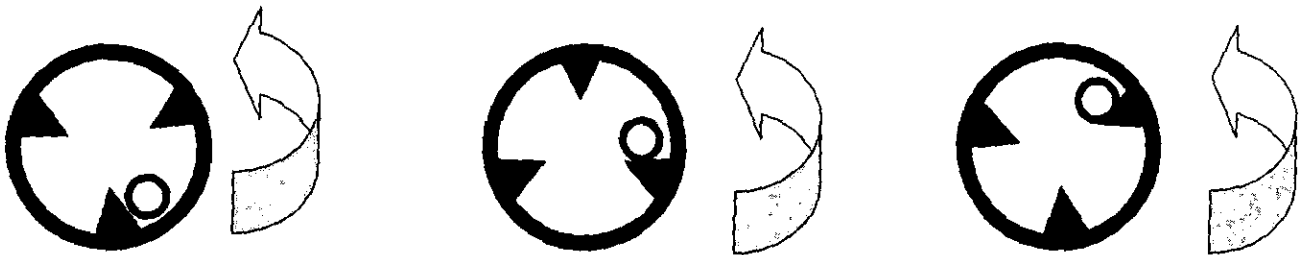
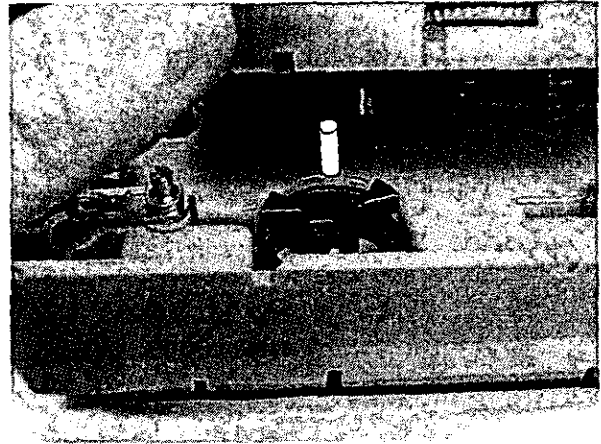
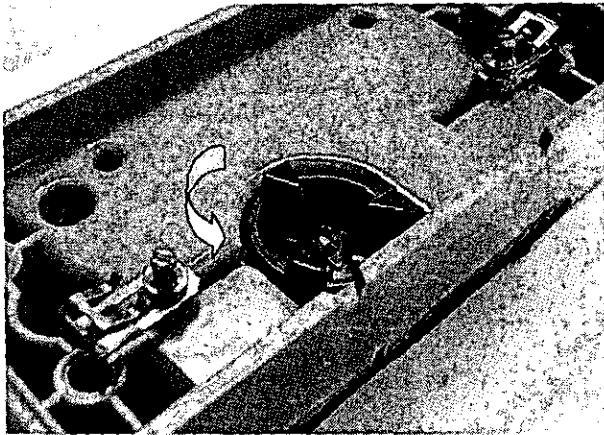
As we noted earlier, this appearance of "sticking and jumping" can be found on meters with or without an AMR device, however, it does appear to be more prevalent on meters that are equipped with AMR. The main reason for this is explained below.



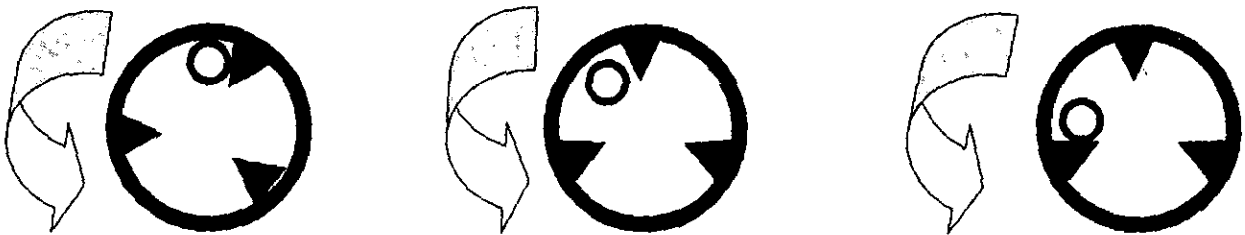
**American Meter
Drive Dog
Connection to
AMR Device**



By design the transmission drive that connects through the AMR device is different on both sides. The drive "dog" connects into a slotted drive (see above). The drive piece that connects to the index has a different design (see below). As you'll note, the part that receives the drive piece is slightly larger which results in a little "play". This "play" is helpful in easing the installation but with the reduced friction of the newer style index this is also what allows the test hand to act the way it does. The following illustration will help explain this and also show you why you will have a steady reading when both test hands are on the upswing.



When the larger test hand is on the up swing, the drive "dog" is pushing the index drive upward. This is when the meter test hands show a steady reading of gas flow through the meter.



When the drive "dog" pushes the index drive past the "twelve o'clock" position the index drive now has gravity pulling it downward quickly toward the next drive stop. Remembering that the drive is attached to the larger test hand, this rapid movement will cause the smaller test hand to move as much 2/3 of a revolution. But, it must be understood that the *meter drive is still moving with the actual flow going through the meter*. So in order to assure the accuracy of the spotting and clocking procedure you must have BOTH test hand in the UP SWING.