



Timing a Flowmeter in the Field

Southwest Kansas Groundwater Management District
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An installed flowmeter physically measures flow inside a pipe and is required by state law to be accurate to within + or - 6%.

A quick and easy "timed test" can be done by anyone with a pen, paper, calculator and watch or stopwatch. This test is not official and cannot be certified but is a good way for a producer to periodically check for installed flowmeter accuracy or problems.

Begin by recording the starting totalizer reading and the starting time. After at least five minutes, record the ending totalizer reading and the ending time. Subtract the starting reading from the ending reading to get the difference. Convert the totalizer difference to gallons and the time difference to a decimal number. Next divide the gallons by the minutes and you have GPM (gallons per minute) that the totalizer is recording.



Start



End

Example #1

999062 is the register reading at the start and a watch reads 9:13:10 (hours:minutes:seconds).

At 9:18:30 the register reads 999067. [999067 x .001 (the unit of measure of this meter) = 999.067]

Using the method above:

9:18:30 – 9:13:10 = 5 minutes 20 seconds or **5.33 minutes** (divide 20 seconds by 60 seconds per minute to get a decimal number)

999067 – 999062 = 5 5 x .001 = .005 AF
.005 AF x 325,851 gallons per AF = **1629.3 gallons**

1629.3 divided by 5.33 minutes = **305.7 gpm**

If the result is different than what the needle indicates and/or what you thought you were pumping then you should check for any obvious problems (such as pipe not full flowing) and do the test again. If the difference continues arrange for a trained person to do an onsite inspection and/or flow test as soon as possible. The meter may need to be sent to a qualified service center for repair.



Example #2

999062 is the register reading at the start and a watch reads 4:47:23.

At 4:52:43 the register reads 999067. The unit of measure is gallons x 1000.

Using the same method:

4:52:43 – 4:47:23 = 5 minutes 20 seconds or **5.33 minutes** (divide 20 seconds by 60 seconds per minute to get a decimal number)

999067 – 999062 = 5 5 x 1000 = **5000 gallons**

5000 gallons divided by 5.33 minutes = **961.5 gpm**

GMD 3 staff can come to your field and perform a flow test free of charge to see if your meter is in good working order so that your crops are receiving the water they need without costly over-watering.

A non-intrusive flowmeter (Standard Meter) is used by GMD 3 to measure flow from outside a pipe and is certified accurate to within + or - 2%. The rate of flow indicated during a flow test is referred to as the "Standard" when comparing it to an installed flowmeter.

During the flow test procedure, gallons per minute (gpm) are determined by each flowmeter. Then a simple math equation is done to establish the difference between the installed and standard flowmeters.

Installed flowmeter gpm – standard flowmeter gpm = difference in gpm (+ or -)

Difference in gpm divided by standard flowmeter gpm = percentage difference (+ or -)

If the percentage difference is a positive number (+) then you are pumping less than what is being registered.

If the percentage difference is a negative number (-) then you are pumping more than what is being registered.

If the result is within the state required + or – 6 % then the installed meter is in compliance and this test result can be certified by GMD 3 and paperwork provided for the producers records.

If the result is more than + or - 6% then the installed flowmeter is out of compliance and must be taken out of service immediately and repaired or replaced. A repair or replacement report must be submitted within 30 days after completed.