



THE GLOBAL STANDARD  
FOR LIVESTOCK DATA

# ICAR Guidelines for the periodic checking of the milk meters

**MK V Milk Meter**

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Network. Guidelines. Certification.

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## 1 Periodic test procedure

In conjunction with the periodic milk meter inspection, all milk meters should be checked for accuracy at least annually.

This test procedure is the same as that specified by the DHIA and approved by ICAR.

## 2 Basic test rig set up

(Refer to Figure 1)

- a. The milk meter is mounted such that the meter base is level.
- b. The milk meter suction hose rests in an open 18 litre (40lb) pail (D) directly below the meter. It has an inlet restrictor (G) to ensure a flow of 3.5 to 4.0 litres per minute at the available vacuum level. An air admission hole (F) 600mm (24 inches) from the meter inlet admits 0.5 cfm (free air) (15 l/min FA). This hole size is 1 mm (No.60 drill).
- c. The milk meter outlet hose falls directly to the inlet of a vacuum trap (H), (for example test bucket, pail milker, or weigh jar). The vacuum trap outlet is connected to a stable vacuum source of nominally 50kPa (15" Hg).
- d. A vacuum tap (C) is fitted on the milk meter inlet hose and the vacuum source hose (B).
- e. Volumetric flasks or accurate scales will be required.

## 3 Basic test procedure

- a. Using water as the working fluid fill the supply pail (D) with 16 litres (16 kg or 35.24lb).
- b. Open the source vacuum tap (B). (Inlet tap C closed).
- c. Ensure the three way tap is wet, properly seated and in the horizontal (milking) position.
- d. Open the inlet hose tap (C).
- e. Draw all of the water from the supply pail (D) through tube (E) past the air admission hole (F) through the milk meter (A) and into the vacuum trap (H).
- f. Record the milk meter flask reading. (Read the bottom of the meniscus).
- g. Turn the three-way tap to drain (upwards) and operate the flask depressor to empty the flask.
- h. When flask is empty close the source vacuum tap (B).
- i. When vacuum trap (H) has returned to atmospheric pressure close the inlet hose tap (C).
- j. Return the three-way tap to 'milking' position, refill the supply pail with exactly 16 litres of water and repeat the procedure, to obtain two results per meter.

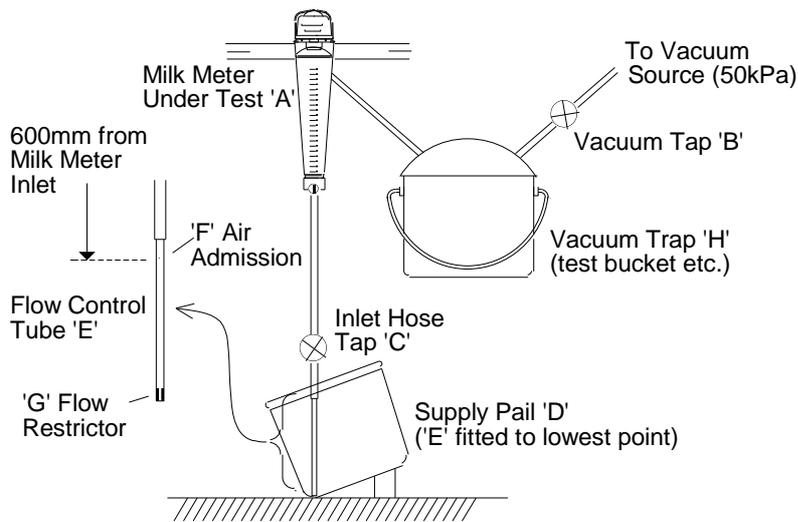


Figure 1. Basic milk meter test rig.

## 4 Results analysis

Calculate the 'p-values' for each reading as follows:

(Working in kilograms)

$$p = \frac{\text{meter reading}}{16.48} \times 100 \%$$

If both 'p-values' are in the range 97% to 103% the milk meter is considered acceptable.

If only one of the 'p-values' is outside the range 97% to 103%, perform the test a third time. The meter is then considered acceptable if no single 'p-value' is outside the range 95% to 105% and the mean of all three values is within the range 97% to 103%.

Any milk meter failing this test should be withdrawn from service and submitted to a certified service agent for repair and recalibration.

## 5 Note

The periodic test procedure should be regularly followed to give confidence in milk meter results.

## 6 Repair and recalibration procedure

This section covers repair and recalibration of the Waikato milk meter, which may be undertaken only at a certified Repair and Recalibration Centre (e.g. DHIA in the USA).

Milk meters submitted to this procedure will be those that have damaged calibration dependent parts, or those that fail the Periodic Test Procedure.

## 7 Damaged milk meters

The parts of a milk meter that may affect calibration are the flask, cover, and base assembly.

Damaged parts should be replaced and the other main parts closely inspected as per the 'Periodic Inspection Procedure'.

The milk meter is then re-tested under the 'Periodic Test Procedure'. The resultant meter p-values must meet the criteria specified.

## 8 Milk meters that fail 'periodic test procedure'

With only three parts to interchange, a simple process of elimination is used to recalibrate the milk meter.

- a. Replace the base assembly and retest.
- b. If the meter fails, replace the cover and retest.
- c. If the meter fails, replace the flask and retest.

A failure at this point is unlikely, but if a single case occurs, repeat the inspection and replacement procedure. If a large number of failures occur at this point, check test rig and testing procedure for any points of non-compliance with these recommended procedures.