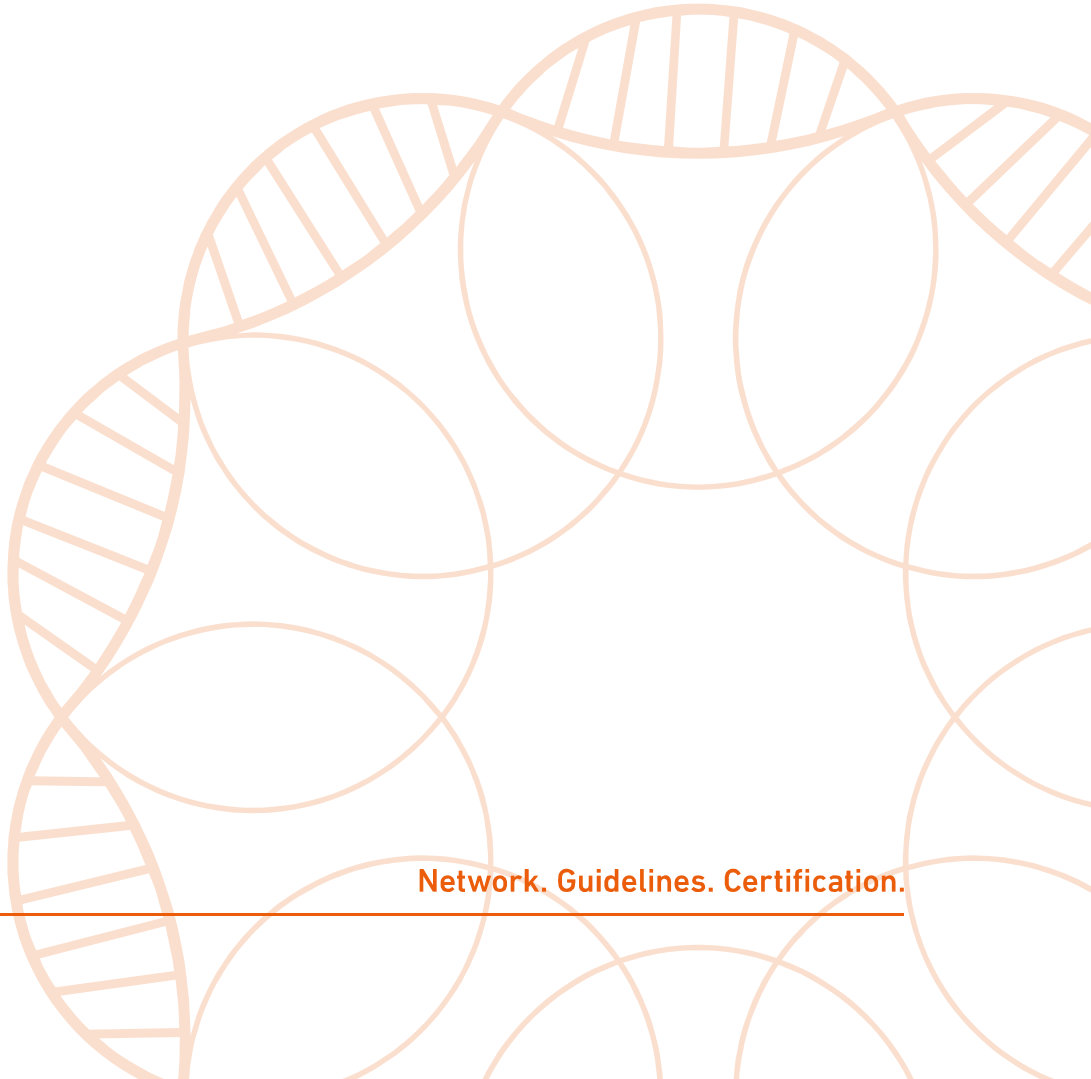
THE GLOBAL STANDARD
FOR LIVESTOCK DATA

ICAR Guidelines for calibration of the milk meters

Gascoigne Melotte MR 2000 Milk Meter

Version June 2018



Network. Guidelines. Certification.

Table of Contents

1 Calibration

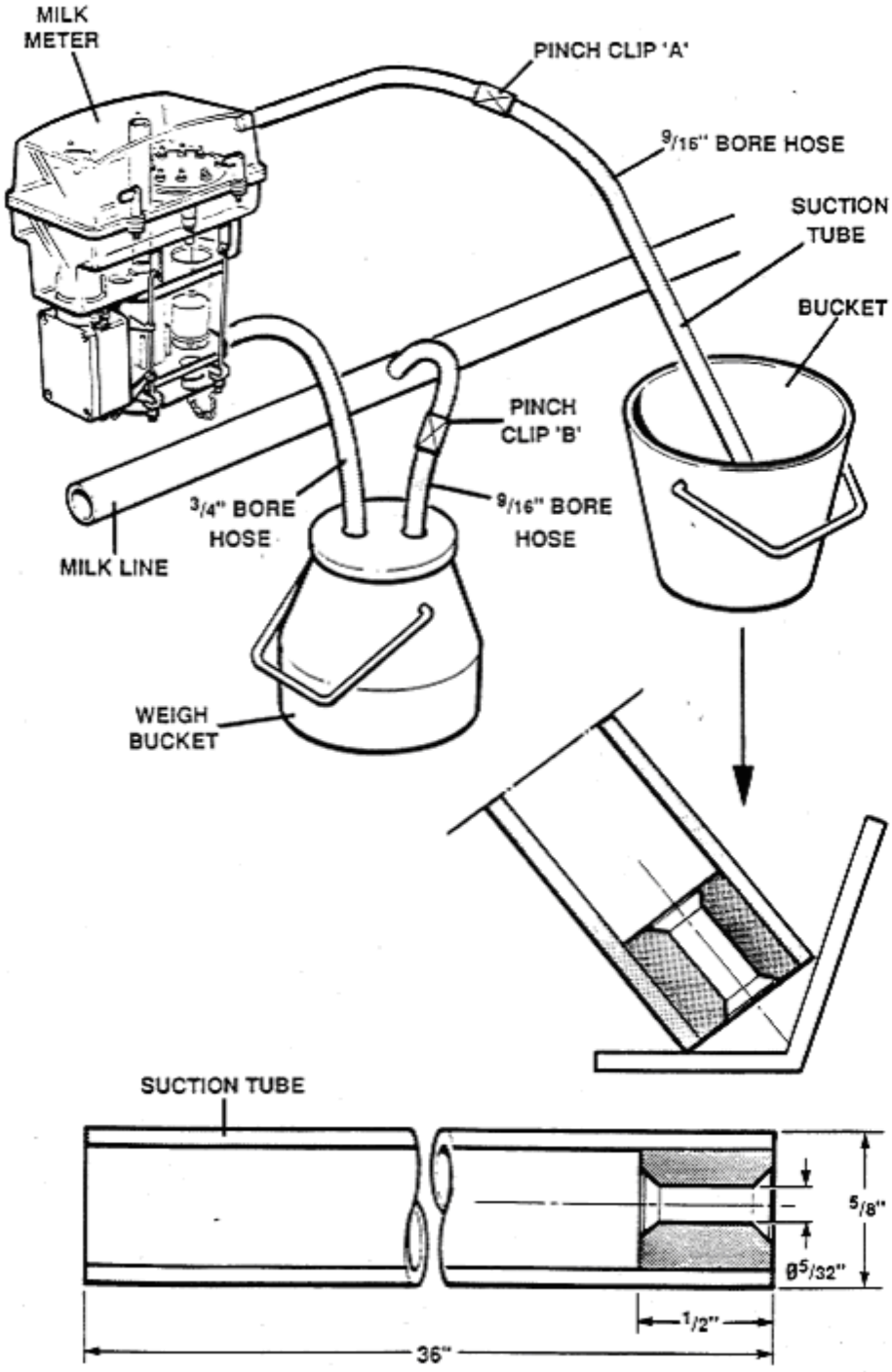
To ensure accurate performance to International I.C.A.R. and United States DHIA Standards, each MR 2000 Milk Meter will require calibrating before use. This procedure may be carried out in between milkings using a water solution.

Once the system has been calibrated and the necessary correction factors for each meter have been calculated and entered, the system will automatically apply these factors in the presence of milk.

The calibration equipment is shown on the opposite page and is as follows:-

- A 4 gallon solution of water with 2 ozs of Hypochlorite or Circulation Cleaner to simulate electrical conductivity of milk.
- A Suction Tube to provide a liquid flow rate of 10 lbs/min.
- A bucket for holding the water solution.
- A Milking Bucket (weighing bucket) to collect the solution that has passed through the Milk Meter.
- 2 x 39" lengths of Milk Hose.
- 1 x 3/4" bore hose to transfer the water solution from the milk meter to the weighing bucket.
- Pinch Clips "A" and "B".
- An accurate set of Weighing Scales.

2 Calibration equipment for GM MR2000



Before commencing the calibration procedure, the calibration values of each milk meter must be checked. For all new installations this will have been Factory set at 500, but for systems that have already been calibrated, the settings may be determined using the following procedure.

All calibration data is entered or changed using the Display Box. See Fig 1

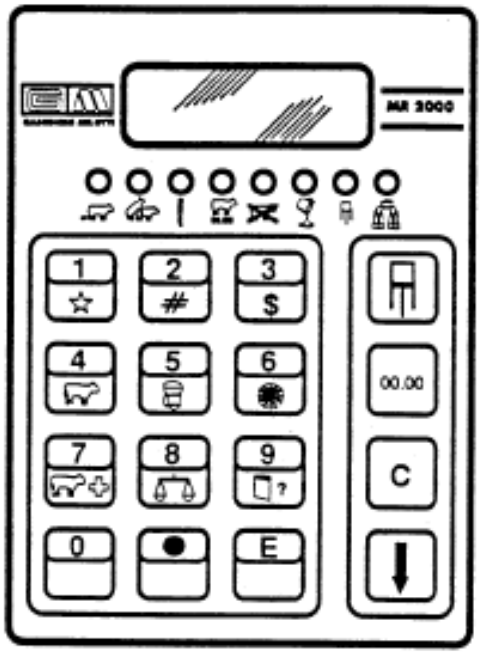


FIG 1

To establish the Calibration Value press the following sequence of keys.

The word "test" will now appear on the display. Then press the following sequence of keys.

The code A3 will now appear in the display, flashing alternately with the current calibration value. Repeat this procedure for each milk meter noting the displayed calibration values.

Check that the Weighing Scales are tared to accommodate the weight of the Milking Bucket then assemble the Calibration Equipment as shown on page 3-2. Remove the Rubber Milk Tube from the Inlet Nozzle of the Milk Meter but leave the Cluster Assembly attached to the Detacher Cylinder. Fit the Suction Tube to the Inlet Nozzle of the Milk Meter.

Set up the milking machine as though for normal milking and start the Vacuum Pump. Shut the Pir Clips "A" and "B".

Check that the LED Display in the MR 2000 Display Box is reading Zero then initiate the Detacher Cylinder to start recording.

Open the Pinch Clips "A and "B" which will allow the water solution to be drawn through the Milk Meter. During this process, the LED Display in the Display Box will register the increasing weight of water solution as it passes through the Milk Meter.

When approximately 25 lbs registers on the LED Display, shut the Pinch Clip "A" and, to finish this particular calibration check, press and hold the Detacher Key on the Display Box until the phrase "ACR" appears on the display. This will raise the Cluster Assembly and also automatically "dump" any remaining water solution from the milk meter.

Check that the 3/4" bore Transfer Hose is empty. Close the Pinch Clip "B" and vent the Weighing Bucket. Weigh the water solution and enter the result on the Calibration Form under "Scale" and alongside "Test 1". Enter actual LED Display reading under Display.

To reset the Display Box to zero, press and hold ∞∞ until the bars appear in the display.

Repeat the entire process twice more recording the results in the appropriate columns of Test 2 and Test 3.

To obtain the Calibration Value follow the instructions on the Calibration Form. Note: an example of a completed Calibration Form is shown overleaf.

Having calculated the new calibration values, the current values held in the Display Boxes must be updated. At this stage a Security Box must be connected to the Wash/Reset Box. NOTE: A Security Box is held by authorised Gascoigne Melotte Dealers.

The following sequence of keys must be entered on each Display Box in turn.

The existing Calibration Value should now be flashing alternately with the code A3.

Press C to clear the existing value and enter the new value, rounded to the nearest whole number.

Then press E to enter that value. Exit calibration mode by pressing and holding the ∞∞ key until

 appear on the display.

Once all of the new calibration values have been entered, the Security Box may be disconnected from the Wash/Reset Box.

3 Calibration form – Calibration to be undertaken with water

METER No.	READING	
	SCALE	DISPLAY
TEST 1	24.8	25.0
TEST 2	24.9	25.2
TEST 3	24.8	25.0
TOTAL	74.5 ÷	75.2 = 0.99
	(A)	(B) (C)
	0.99 x	500 = 495
	(C)	(D) (E)

A = TOTAL SCALE READINGS
B = TOTAL DISPLAY READINGS
C = RATIO OF A TO B
D = MILKMETER CALIBRATION VALUE DURING TEST*
E = NEW CALCULATED CALIBRATION VALUE

* FACTORY SETTING = 500

METER No.	READING	
	SCALE	DISPLAY
TEST 1		
TEST 2		
TEST 3		
TOTAL	÷	=
	(A)	(B) (C)
	x	=
	(C)	(D) (E)

A = TOTAL SCALE READINGS
B = TOTAL DISPLAY READINGS
C = RATIO OF A TO B
D = MILKMETER CALIBRATION VALUE DURING TEST*
E = NEW CALCULATED CALIBRATION VALUE

* FACTORY SETTING = 500

4 Calibration check

It is recommended that a Calibration Check is carried out annually.

A Security Box is not required nor do the Calibration Values of the Milk Meter need to be determined.

Ensure that the Weighing Scales are tared to accommodate the weight of the Milking Bucket then assemble the Calibration Equipment as shown on page 3-1. Remove the Rubber Milk Tube from the Inlet Nozzle of the Milk Meter but leave the Cluster Assembly attached to the Detacher Cylinder. Fit the Suction Tube to the Inlet Nozzle of the Milk Meter.

Set up the milking machine as though for normal milking and start the Vacuum Pump. Shut the Pinch Clips "A" and "B".

Check that the LED Display in the MR 2000 Display Box is reading Zero then initiate the Detacher Cylinder to start recording.

Open the Pinch Clips "A and "B" which will allow the water solution to be drawn through the Milk Meter. During this process, the LED Display in the Display Box will register the increasing weight of water solution as it passes through the Milk Meter.

When approximately 25 lbs registers on the LED Display, shut the Pinch Clip "A" and, to finish t particular calibration check, press and hold the Detacher Key on the Display Box until the phras "ACR" appears on the display. This will raise the Cluster Assembly and also automatically "dump" any remaining water solution from the milk meter.

Check that the 3/4" bore Transfer Hose is empty. Close the Pinch Clip "B" and vent the Weighing Bucket. Weigh the water solution and enter the result on the Calibration Check Form under "Scale" and alongside "Test 1". Enter actual LED Display reading under Display.

To reset the Display Box to zero, press and hold  until the bars appear in the display.

Repeat the entire process twice more recording the results in the appropriate columns of Test 2 and Test 3.

To obtain the Relative Error follow the instructions on the Calibration Check Form. Note: an example of a completed Calibration Check Form is shown on page 3-7.

The resulting Relative Error should be no more than ± 2%. Should the error be outside these limits, it will be necessary to re-calibrate the Milk Meter.

5 Calibration check form – Calibration check to be undertaken with water

METER No.	READING	
	SCALE	DISPLAY
TEST 1	24.3	24.7
TEST 2	23.8	24.0
TEST 3	25.1	24.9
TOTAL	73.2 —	73.6 = - 0.4
	(A)	(B) (C)
	- 0.4 ÷	73.2 x100%= - 0.005
	(C)	(A) (D)

A = TOTAL SCALE READINGS
B = TOTAL DISPLAY READINGS
C = ABSOLUTE ERROR
D = RELATIVE ERROR (MUST BE LESS THAN ± 2%)

METER No.	READING	
	SCALE	DISPLAY
TEST 1		
TEST 2		
TEST 3		
TOTAL	—	=
	(A)	(B) (C)
	÷	x100%=
	(C)	(A) (D)

A = TOTAL SCALE READINGS
B = TOTAL DISPLAY READINGS
C = ABSOLUTE ERROR
D = RELATIVE ERROR (MUST BE LESS THAN ± 2%)